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PACIFIC NORTHWEST RIVER BASINS COMMISSION VANCOUVER WASH F/6 8/6
THE WILLAMETTE BASIN COMPREHENSIVE STUDY OF WATER AND RELATED L--ETC(U)
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WILLAMETTE BASIN COMPREHENSIVE STUDY

Water and Related Land Resources

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APPENDIX K

RECREATION



WILLAMETTE BASIN TASK FORCE - PACIFIC NORTHWEST RIVER BASINS COMMISSION

1969

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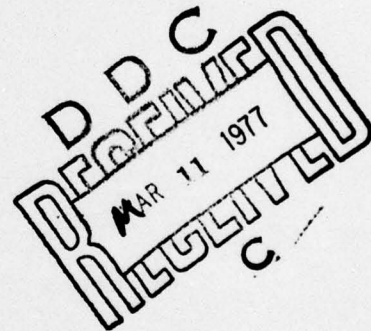
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Willamette Basin Comprehensive Study
Appendix K - Recreation
1969

General Guide To Color Code of Reference Tabs

1. Clear (white) Tabs - General Description of Basin and Problems.
2. Blue Tabs - Alternatives Available to Satisfy Needs.
3. Orange Tabs - Proposed Agency Responsibilities for Satisfying 1980 Needs (Early Action Plan).
4. Green Tabs - Detailed Information on Definitions, Methodology, Subbasin Analyses and Subbasin Concept Recreation Plans to Meet 2020 Needs.

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APPENDIX K.

RECREATION.

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WILLAMETTE BASIN TASK FORCE - PACIFIC NORTHWEST RIVER BASINS COMMISSION

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CREDITS

This is one of a series of appendices to the Willamette Basin Comprehensive Study main report. Each appendix deals with a particular aspect of the study. The main report is a summary of information contained in the appendices plus the findings, conclusion, and recommendations of the investigation.

This appendix was prepared by the Recreation Committee under the general supervision of the Willamette Basin Task Force. The committee was chaired by the U. S. Bureau of Outdoor Recreation and included representation from the agencies listed below.

- National Park Service
- Oregon State Water Resources Board
- Oregon State Highway Department - Parks Division
- Oregon State Game Commission
- Soil Conservation Service
- Corps of Engineers
- Forest Service
- Bureau of Land Management
- Oregon State Board of Health
- Oregon State Marine Board
- Oregon State Fish Commission
- Bureau of Sport Fisheries and Wildlife
- Federal Power Commission
- Lane County Parks Department
- Oregon County Park Association

ORGANIZATION

PACIFIC NORTHWEST RIVER BASINS COMMISSION

Columbia Basin Inter-Agency Committee until 1967

WILLAMETTE BASIN TASK FORCE

State of Oregon - Chairman

Commerce

Army

Labor

Agriculture

Federal Power Commission

Interior

Health, Education and Welfare

REPORT
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TECHNICAL STAFF
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PLAN
FORMULATOR

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- | | |
|----------------------|---|
| A. Study Area | G. Land Measures and Watershed Protection |
| B. Hydrology | H. Municipal and Industrial Water Supply |
| C. Economic Base | I. Navigation |
| D. Fish and Wildlife | J. Power |
| E. Flood Control | K. Recreation |
| F. Irrigation | L. Water Pollution Control |
| | M. Plan Formulation |

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The Willamette Basin Comprehensive Study has been directed and coordinated by the Willamette Basin Task Force listed above. The Task Force has been assisted by a technical staff, a plan formulator and a report writer. Appendix committees listed on the following page, carried out specific technical investigations.

APPENDIX COMMITTEES

Appendix-Subject

A - Study Area	<u>OSWRB - Chairman:</u>	FWPCA, USBPA, USBLM, USBM, USBOR, USBR, USBSF&WL, USCE, USERS, USFS, USGS, USNPS, USSCS, OSDC, OSDF, OSDG&MI, OSS&WCC, OSU
B - Hydrology	<u>USGS - Chairman:</u>	FWPCA, USBPA, USBR, USCE, USSCS, USBW, OSE, OSWRB
C - Economic Base	<u>USCE - Chairman:</u>	FWPCA, USBPA, USBCF, USBM, USBOR, USBR, USBSF&WL, USDL, USERS, USFS, OSDC, OSU, UO, PSC-PR&C
D - Fish & Wildlife	<u>USBSF&WL - Chairman:</u>	FWPCA, USBCF, USBLM, USBOR, USCE, USDA, USFS, USGS, USSCS, OSFC, OSGC, OSWRB, USHEW
E - Flood Control	<u>USCE - Chairman:</u>	FWPCA, USBR, USDA, USGS, USSCS, USBW, OSDC, OSE, OSWRB, UO
F - Irrigation	<u>USBR - Chairman:</u>	USSCS, OSDC, OSWRB, OSU
G - Land Measures and Watershed Protection	<u>USSCS - Chairman:</u>	FWPCA, USBCF, USBLM, USBOR, USBR, USBSF&WL, USFS, OSU
H - M&I Water Supply	<u>FWPCA - Chairman:</u>	USBR, USBSF&WL, USGS, USSCS, OSBH, OSDC, OSWRB, USHEW
I - Navigation	<u>USCE - Chairman:</u>	OSDC, OSMB, POP, OSU
J - Power	<u>USBPA - Chairman:</u>	FPC, FWPCA, USBCF, USBR, USCE, USFS, USGS, OSE, OSWRB
K - Recreation	<u>USBOR - Chairman:</u>	FPC, FWPCA, USBLM, USBSF&WL, USCE, USFS, USNPS, USSCS, OSBH, OSDC, OSFC, OSGC, OSHD-PD, OSMB, OSWRB, LCPD, OCPA, USHEW
L - Water Pollution Control	<u>FWPCA - Chairman:</u>	USBCF, USBLM, USBOR, USBR, USBSF&WL, USGS, USSCS, OSBH, OSE, OSFC, OSGC, OSWRB, OSU, USHEW
M - Plan Formulation	<u>Plan Formulator - Chairman:</u>	USCE, USDA, USDI, OSWRB

FPC - Federal Power Commission
 FWPCA - Federal Water Pollution Control Administration
 USBPA - Bonneville Power Administration
 USBCF - Bureau of Commercial Fisheries
 USBLM - Bureau of Land Management
 USBM - Bureau of Mines
 USBOR - Bureau of Outdoor Recreation
 USBR - Bureau of Reclamation
 USBSF&WL - Bureau of Sport Fisheries and Wildlife
 USCE - Corps of Engineers
 USDA - Department of Agriculture
 USHEW - Department of Health, Education and Welfare
 USDI - Department of Interior
 USDL - Department of Labor
 USERS - Economic Research Service
 USFS - Forest Service
 USGS - Geological Survey
 USNPS - National Park Service
 USSCS - Soil Conservation Service
 USBW - Weather Bureau

OSBH - Oregon State Board of Health
 OSDC - Oregon State Department of Commerce
 OSDF - Oregon State Department of Forestry
 OSDG&MI - Oregon State Department of Geology and Mineral Industries
 OSE - Oregon State Engineer
 OSFC - Fish Commission of Oregon
 OSGC - Oregon State Game Commission
 OSHD-PD - Oregon State Highway Department - Parks Division
 OSMB - Oregon State Marine Board
 OSS&WCC - Oregon State Soil and Water Conservation Committee
 OSWRB - Oregon State Water Resources Board
 OSU - Oregon State University
 PSC-PR&C - Portland State College - Center for Population Research and Census Service
 UO - University of Oregon
 LCPD - Land County Parks Department
 OCPA - Oregon County Parks Association
 POP - Port of Portland

BASIN DESCRIPTION

Between the crests of the Cascade and Coast Ranges in northwestern Oregon lies an area of 12,045 square miles drained by Willamette and Sandy Rivers--the Willamette Basin. Both Willamette and Sandy Rivers are part of the Columbia River system, each lying south of lower Columbia River.

With a 1965 population of 1.34 million, the basin accounted for 68 percent of the population of the State of Oregon. The State's largest cities, Portland, Salem, and Eugene, are within the basin boundaries. Forty-one percent of Oregon's population is concentrated in the lower basin subarea, which includes the Portland metropolitan area.

The basin is roughly rectangular, with a north-south dimension of about 150 miles and an average width of 75 miles. It is bounded on the east by the Cascade Range, on the south by the Calapooya Mountains, and on the west by the Coast Range. Columbia River, from Bonneville Dam to St. Helens, forms a northern boundary. Elevations range from less than 10 feet (mean sea level) along the Columbia, to 450 feet on the valley floor at Eugene, and over 10,000 feet in the Cascade Range. The Coast Range attains elevations of slightly over 4,000 feet.

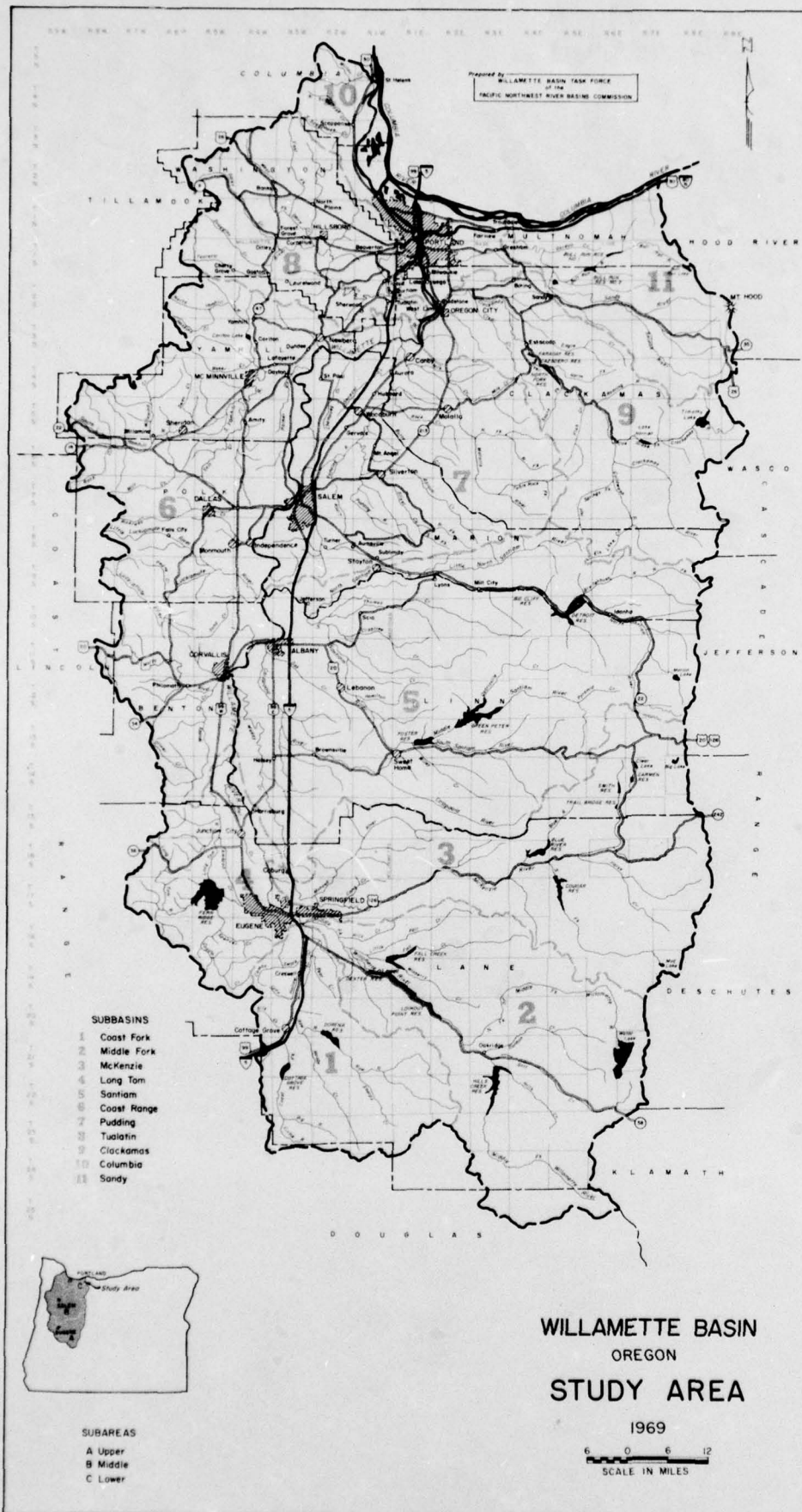
The Willamette Valley floor, about 30 miles wide, is approximately 3,500 square miles in extent and lies below an elevation of 500 feet. It is nearly level in many places, gently rolling in others, and broken by several groups of hills and scattered buttes.

Willamette River forms at the confluence of its Coast and Middle Forks near Springfield. It has a total length of approximately 187 miles, and in its upper 133 miles flows northward in a braided, meandering channel. Through most of the remaining 54 miles, it flows between higher and more well defined banks unhindered by falls or rapids, except for Willamette Falls at Oregon City. The stretch below the falls is subject to ocean tidal effects which are transmitted through Columbia River.

Most of the major tributaries of Willamette River rise in the Cascade Range at elevations of 6,000 feet or higher and enter the main stream from the east. Coast Fork Willamette River rises in the Calapooya Mountains, and numerous smaller tributaries rising in the Coast Range enter the main stream from the west.

In this study, the basin is divided into three major sections, referred to as the Upper, Middle, and Lower Subareas (see map opposite). The Upper Subarea is bounded on the south by the Calapooya Mountains and on the north by the divide between the McKenzie River drainage and the Calapooya and Santiam drainages east of the valley floor and by the Long Tom-Marys River divide west of it. The Middle Subarea includes all lands which drain into Willamette River between the mouth of Long Tom River and Fish Eddy, a point three miles below the mouth of Molalla River. The Lower Subarea includes all lands which drain either into Willamette River from Fish Eddy to its mouth or directly into Columbia River between Bonneville and St. Helens; Sandy River is the only major basin stream which does not drain directly into the Willamette.

For detailed study, the three subareas are further divided into 11 subbasins as shown on the map.



*The Summary and Recommendations are presented
beginning on page V-1*

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Water may be pleasant to look upon, to walk beside, to contemplate. It may provide a variety of active recreation experiences. It may enhance the visual scene wherever it appears--in cities or in wilderness. It may enhance values of adjoining properties--public and private. It may be a focal point of pride in any community.

A National Technical Advisory Committee on Water Quality

God has lent us the earth for our life.
It is a great entail.
It belongs as much to those who follow us as it
does to us
And we have no right, by anything we may do
or neglect to do,
To involve them in unnecessary penalties,
Or to deprive them of the benefit
Which we have in our power to bequeath.

John Ruskin
1819-1900

INTRODUCTION

INTRODUCTION



... government has as much a duty to protect the land, the air, the water, the natural environment of man against such (technological) damage, as it has to protect the country against foreign enemies and the individual against criminals...

Vice Admiral H.G. Rickover, U. S. Navy



P U R P O S E A N D S C O P E

The continuing intensification and expansion of outdoor recreation activities indicates a need to assess recreation in the Willamette Basin with respect to the present and future effects on the land, water, and overall economy of the area. The purpose of this appendix is to provide such an assessment. It presents an inventory of existing recreational opportunities in the basin, discusses measures for more efficient use of the recreation resource, and identifies problems concerning outdoor recreation and environmental quality. Recreation demands are projected to 1980, 2000, and 2020, and alternative proposals are presented for satisfying those demands.

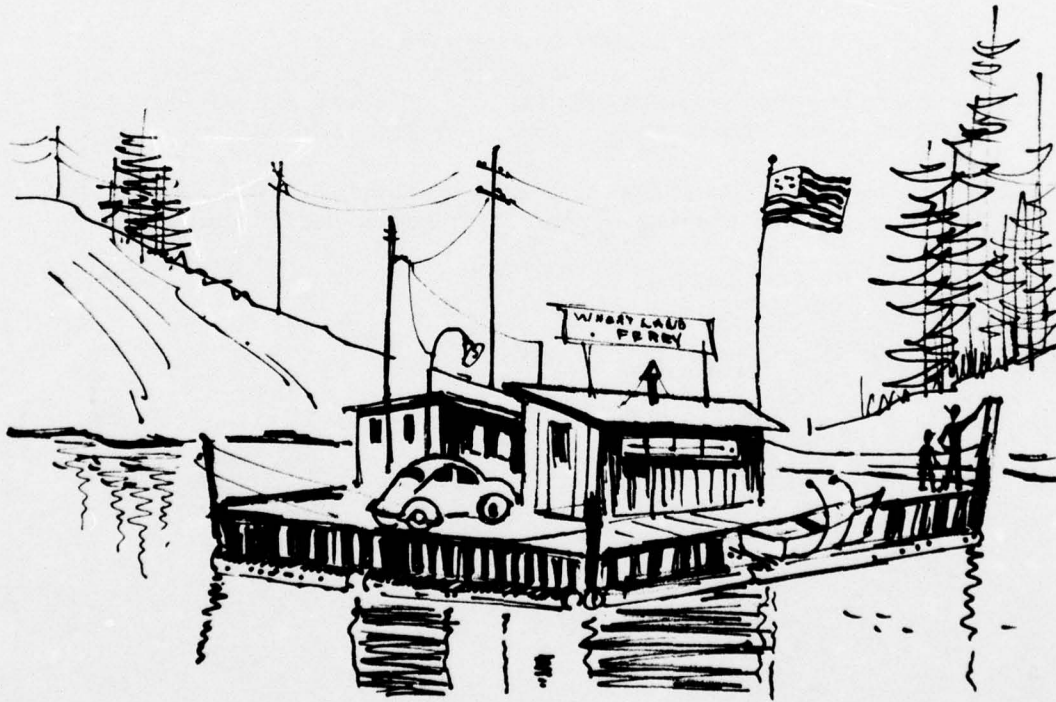
I was asked the other day what took most of my time as President, and I could answer without hesitation in one word: planning - planning - planning.

We just don't realize enough how pressing, and how urgent, and how critical it is for us to be planning today for America's future needs tomorrow -- needs 10, 20, 30 years hence, when this Nation will have three people for every two that we have today.

President Johnson, on July 22, 1965, during the signing of the Water Resources Planning Act

RELATIONSHIP TO OTHER PARTS OF THE REPORT

This appendix, in common with the other functional appendices, relies upon the supporting data contained in Appendices A, B, and C, defining lands, waters, and economics of Willamette Basin. There is also an interchange of pertinent information with other functional appendices. Particular relationships exist between this appendix and Appendix D - Fish and Wildlife (fishing and hunting, as recreational activities, are discussed in that appendix). Appendix M - Plan Formulation, contains a plan to satisfy all functional needs including outdoor recreation. The data contained in this appendix provide the background for recreation aspects of the main report.



Without water, a man dies. Without water, a community faces the same fate.

*Surgeon General Leonard A. Scheele,
U. S. Public Health Service*

H I S T O R Y

The outdoors has long been an important part of life in Willamette Basin--first as a wilderness to be conquered, and now as a source of inspiration and recreation. Recently, more people have sought the out-of-doors for camping, picnicking, sightseeing, boating, water skiing, and many other activities. Willamette Basin has many natural features conducive to recreation--old-growth forests, lakes, fishing streams, outstanding scenery, abundant wildlife, suitable hunting terrain, and wilderness areas.

The first recorded recreation use in the Pacific Northwest dates back to 1909 when 45,000 people visited the national forests. For about the next quarter-century, recreation developments on these lands consisted of what the campers did themselves or what resulted from work of forest rangers who had an interest in outdoor recreation.

In the period 1933-40, the Civilian Conservation Corps provided the first real stimulus by building improvements directed toward recreation. The facilities were well constructed and could accommodate more people than used the national forests for recreation at that time.



Photo I-1 In 1909, 45,000 recreationists visited the national forests of the Pacific Northwest. (U.S.F.S. Photo)



Photo I-2 Many of the first recreation facilities were constructed by the Civilian Conservation Corps. (O.S.H.D. Photo)

The national forests contained most of the land available for public recreation early in this century. The Oregon State Park system was started in 1922 when 5.5 acres of land near Salem were deeded to the State by descendants of Oregon pioneer Sarah Helmick. By 1966, Sarah Helmick Park was but one of 35 State parks in the basin, and the Bureau of Land Management also had nine areas developed for public use where none existed 10 years before.

Another important development in recreation for Willamette Basin was the construction of a number of multi-purpose reservoirs by the Corps of Engineers. Between 1941 and 1968, 13 projects were placed in operation, adding over 33,000 acres of slack-water surface to the recreation potential of the basin.

Some managed hunting and fishing preserves under private holdings have developed in Willamette Basin, and it appears likely that an increase in private recreation development will occur as the economic gain for recreational use of land becomes more competitive with ranching, farming, or some other present use.

Considerable acreage is being converted to sites for residences, shopping centers, highways, industrial plants, and other requirements of today's automated society. The land uses are becoming fixed and, to a large extent, do not provide adequately for outdoor recreation. Too often, wooded areas are cleared, and streams are buried in culverts for new developments. People find themselves traveling farther and farther in search of pleasant, uncrowded places to enjoy a walk in the woods, a family picnic, or water for swimming, fishing, and boating.

This pressure on available resources, along with increasing competition for recreation areas, became a matter of great concern during the 1950's. In 1958, Congress established the Outdoor Recreation Resources Review Commission (ORRRC) to survey the outdoor recreation needs of the American people for the next 40 years and to make recommendations for meeting these needs. A comprehensive report, "Outdoor Recreation for America," buttressed by 27 special study reports, was transmitted to the President and Congress in 1962. The findings and recommendations provide a basis on which action programs can be built. Perhaps one of the more important findings of the Commission was that better planned, bolder, and more imaginative efforts are required to meet the qualitative, as well as quantitative, needs of the American people. Without such efforts, the gap between demand and supply of outdoor recreation resources and facilities will widen.



Photo I-3 Frequent overcrowding detracts from the recreation experience. (U.S.F.S. Photo)

After World War II, the growth of outdoor recreation mushroomed beyond all expectations. Public use of State parks in the basin increased from about 500,000 visitor-days in 1950 to 1,350,000 in 1958. It remained relatively static through 1962, but by 1964 had increased to 1,831,000 visitor-days. Recreation use of the national forests in the basin increased from some 2-1/2 million to over 3-1/2 million visitor-days between 1958 and 1963. Attendance at Corps of Engineers reservoirs increased from about 83,000 in 1945 to 3,000,000 in 1967. Comparable statistics for other areas are not available.

Another measure of the growth in recreation is the increase in the number of pleasure boats. Stimulated by the development of better outboard motors and fiberglass, better highways, and new dams creating large impoundments of water, the number of small craft in the Willamette Basin increased by more than 75 percent in the five-year period 1960-1964, from 20,382 to 35,950.

It should be noted, however, that the recreation picture has some dark spots. Growing demands on land and water resources are diminishing the availability of areas capable of outdoor recreation development. Developed recreation sites are frequently so overcrowded that enjoyment of the natural values inherent when the areas were set aside, is impossible.



Photo I-4 The number of pleasure boats in Willamette Basin has increased by more than 75 percent in five years. (U.S.F.S. Photo)

DEFINITIONS

Terms used throughout this appendix are defined as follows:

ACTIVITY OCCASION - Participation by an individual in any one recreation activity during any part of a day.

RECREATION DAY - A visit by one individual to a recreation development or area for recreation purposes during a reasonable portion or all of a 24-hour period. It is assumed that the average person participates in 2.5 activities during an average recreation day.

PARTICIPATING POPULATION - That population which is considered to affect the recreation demand for facilities in an area.

LATENT DEMAND - That recreation demand inherent in the population but not reflected in the use of existing facilities; additional participation could be expected to occur if adequate facilities were made available.

PARTICIPATION RATE - The number of occasions of participation in an activity by an individual during a measured time period.

RECREATION DEMAND - The expression of people's interest in outdoor recreation opportunities. Expressed in this report as either recreation days or activity occasions.

RECREATION NEED - The difference between demand and capacity expressed in recreation days.

RECREATION CAPACITY - The ability of resources and facilities to provide outdoor recreation opportunities.

DAY-USE ZONE - Within a 40-mile radius of the central business district of a metropolitan area or population center.

WEEKEND-USE ZONE - The area between two circles with 40-mile and 125-mile radius.

VACATION-USE ZONE - The area beyond the weekend-use zone (125 miles).



NON-WATER RELATED ACTIVITIES - Those activities listed below that do not depend on water for enjoyment.

Driving for Pleasure - Includes both riding and driving for pleasure. Does not include sightseeing as defined under water-related activities.

Walking for Pleasure - Any walking not included under Hiking or Nature Walks.

Playing Games and Sports - Included are all team sports, such as baseball, football, outdoor basketball, etc., as well as non-team sports such as tennis, golf, horseshoes, etc.

Bicycling - Any bicycle riding done only for pleasure.

Attending Outdoor Sports - Attendance at any outdoor sports event as a spectator.

Horseback Riding - Includes only recreation riding.

Outdoor Drama and Concerts - Included here are musical, dramatic, artistic or other non-supporting events which are conducted out of doors.

Mountain Climbing - Any climbing which requires climbing gear such as rope, axes, crampons, etc.

Miscellaneous - This category includes any other outdoor recreation activity not specifically defined. Examples are: skeet shooting, gliding, horse and buggy riding, trampoline jumping, etc.

Sledding and Tobogganing - Recreation use of a sled, toboggan, bobsled, or similar vehicle designed for sliding over snow or ice.





Snow Skiing - Any noncompetitive recreation use of skis on snow.



WATER-RELATED ACTIVITIES - Those activities that are water-based or are enhanced by water, excluding fishing and hunting.

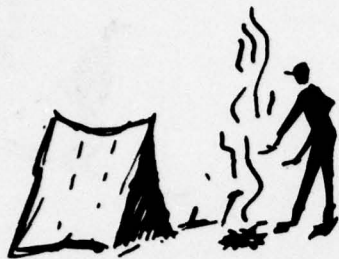
Swimming - All swimming and bathing, including wading, skin diving, and scuba diving.

Boating - The recreation use of any boat, canoe, raft, float, etc.

Water Skiing - Any of the various sports where the person is towed behind a boat.

Picnicking - An outdoor activity away from home in which the primary purpose is eating a meal out-of-doors.





Camping - Living out-of-doors using for shelter a bed roll, sleeping bag, trailer, tent, if the person takes his bedding, cooking equipment, and food with him.

Sightseeing - Looking at something of interest, the major limitation being that the sightseeing must be intentional. Excluded are such things as casually looking from the car window during a trip. If the person took a particular route or went out of his way to see a particular sight, it is classified as sightseeing.

Nature Walks - Walks for the purpose of observing either plants, birds, or animals, and the collection of specimens, photographing natural subjects, etc.

Hiking - Hiking on trails with a pack. Excludes casual walking and nature walks.



M E T H O D O L O G Y

The methodology use as a basis for the Recreation Appendix consists of the following steps: (1) determination of present and future demand, (2) determination of existing and potential supply of both developed and undeveloped recreation resource, (3) determination of capacity of the supply, (4) determination of need by subtracting supply from demand, (5) determination of the resource and facility requirements, (6) determination of agency responsibility to satisfy needs.



Photo I-5 An increasing number of people are enjoying the wintertime beauty of the forests. (Dick Bolding Photo)



*How is the spirit of a free people to be formed and animated
and cheered, but out of the storehouse of its historical
recollections?*

Edward Everett, 1794-1865

*If we could first know where we are, and
whither we are tending, we could better judge
what to do, and how to do it.*

Abraham Lincoln

PRESENT STATUS

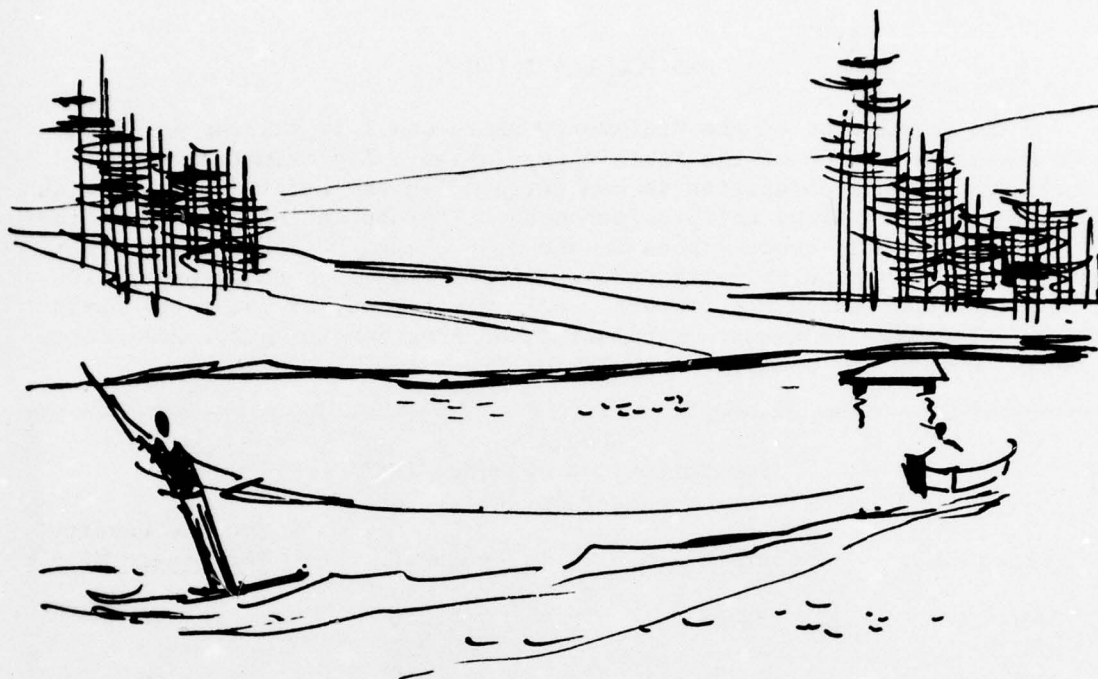
PRESENT STATUS



Today, we face perhaps the gravest -- certainly the most stimulating -- challenge in the history of conservation. It is the challenge to build a quality society -- one in which we manage not just to preserve the delicate balance between the needs of our people and the natural resources of our land, but actually to improve the heritage which has been handed to us.

Quest for Quality, 1965





This section presents an overview of the entire basin. Information is presented on population, availability of recreation resources, accessibility, use trends, problems, and related factors important in the analysis of present recreation as well as providing a basis for projecting future demands. Specific information for each of the 11 subbasins and the Willamette Recreation Waterway is presented in Addendum A.

It is concluded from the general data presented in this section that:

1. People now seek areas within 40 miles or so for day use.
2. There has been a spectacular rise in water-based recreation activities, along with a solid increase in total recreation use.
3. Day use has increased more rapidly than overnight use.
4. Those recreation resources found in the basin's non-urban areas receive a substantial portion of their use from nonresidents.
5. The basin contains an abundance of wilderness and other specialized recreation areas.

P O P U L A T I O N

The population of the Willamette Basin was 1.17 million in 1960, or about two-thirds of the State's population. Approximately 40 percent of Oregon's population is concentrated in the Lower Subarea, which includes the Portland metropolitan area. The population of each of the three subareas is concentrated in one or two cities. About 75 percent of the basin's population is urban. Of the remaining rural population, less than one-fourth are farmers. Only six percent of the total basin population live on farms. Population and area densities for Willamette Basin in 1960 are summarized in Table II-1.

Table II-1
*Population and density, 1960
by subarea*

<u>Subarea</u>	<u>Square Miles</u>	<u>Population</u>	<u>Average Density Per Square Mile</u>
Upper	3,887	156,250	40
Middle	5,420	289,950	53
Lower	<u>2,738</u>	<u>721,650</u>	264
Willamette Basin	12,045	1,167,850	97



Photo II-1 More than half the population in the Lower Subarea is in Portland. (O.S.H.D. Photo)

The Lower Subarea is the most populous area in Oregon, with a population of about 722,000 in 1960 or 264 persons per square mile. More than half the people live in the City of Portland. The trend in the last three decades has been from rural to urban. Recently, the rural nonfarm population has remained stable, while rural farm populations continue to decrease. About three-fourths of the people in the Lower Subarea live in an urban environment and are the primary users of the nearby recreation facilities. This metropolitan area includes Portland and suburbs, and Beaverton, Oregon City, Gresham, Hillsboro, Lake Oswego, and Forest Grove. These centers represent a concentrated recreation demand, as they are all located within about a 25-mile radius.



Photo II-2 The Middle Subarea contains 53 persons per square mile. Salem, shown above, is its major city. (O.S.H.D. Photo)

The Middle Subarea had a population of about 290,000 in 1960, or 53 persons per square mile. Fifty percent of the people live in urban areas, including 14 cities and towns with more than 2,500 inhabitants, while 13 percent live on farms. About one-fourth of the population in the Middle Subarea live in Salem, the largest city, and the adjacent unincorporated suburban area. Corvallis is the second-largest city. This subarea has a larger farm population than either of the other two subareas; over half the farm population of the Willamette Basin live in the Middle Subarea.

The dispersed population pattern in the Middle Subarea results in a more advantageous relationship between the people and the resource than exists where population is concentrated. Due to the larger rural population, there is likely to be a different type of recreational activity preference. The ORRRC report states that activities such as hunting and fishing may be more popular than water-skiing, playing games, hiking, boating, sightseeing, and swimming in a type of economic area such as the Middle Subarea. The population distribution of this subarea also creates less pressure on the highways.



Photo II-3 The Upper Subarea is the least densely populated in the basin. (Delano Photo)

In 1960, the population of the Upper Subarea was about 156,000, representing a density of 40 persons per square mile. About two-thirds of the residents live within the incorporated cities of Eugene and Springfield or adjacent suburban areas. The second-largest urban area is Cottage Grove, with a population of 3,000. All other towns have populations of less than 2,500. Although 30 percent of the residents live in rural areas, only five percent live on farms.

The population-travel pattern consists of a concentration in the Eugene-Springfield area, fanning out in all directions to the recreational source. The sparse population and the abundant resources give this subarea the most favorable ratio of population to recreational opportunities in the basin.

RECREATION RESOURCES

LAND

Willamette Basin is richly endowed with natural resources which provide recreation opportunities and environmental quality. Volcanic peaks, such as Mount Hood, Mount Jefferson, and the Three Sisters, attract recreationists from far and wide. Coupled with these features are expansive areas set aside as "wilderness" to be preserved for all time. Nearly 4.4 million of the approximately 7.7 million acres of land in the basin are classified for some form of outdoor recreation use.

The six land classes developed by the Outdoor Recreation Resources Review Commission (ORRRC) and adopted by the Bureau of Outdoor Recreation (BOR) are used to inventory the recreation lands of the basin:

Class I Lands - High Density Recreation Areas - Areas intensively developed and managed for heavy use. Capacity of average annual visitation to these areas in the basin is approximately 3,000 per acre, with at least 70 percent of the land area developed. Examples of Class I areas are: Orchard Point Park (Fern Ridge Reservoir) and Blue Lake Park in Multnomah County.

Class II Lands - General Outdoor Recreation Areas - Areas subject to substantial development for a wide range of specific recreation uses such as campgrounds, picnic areas, and ski areas. In the basin, the capacity of average annual visitation is approximately 250 visits per acre with approximately 25 percent of the land area developed. Examples of Class II areas are: Oak-Pioneer Park in Portland and Hendricks Bridge State Park on McKenzie River.

Class III Lands - Dispersed Recreation Areas - Various types of areas that are suitable for recreation in a natural environment, usually in combination with other uses. Often this land forms the scenic backdrop for Class I & II areas. Uses such as hunting, fishing, and hiking occur but annual use per acre is light - approximately two visits per acre. Development is slight with trails, roads, and primitive facilities. Examples of Class III lands are: Forest Park in Portland.

Class IV Lands - Unique Natural Areas - Outstanding features requiring special care and management to preserve their natural condition. Uses such as sightseeing and nature studies are typical. Developments are generally limited to trails and sanitary facilities in the immediate vicinity of the natural feature. Annual capacity of visitation is about 100 visits per acre. Examples of Class IV areas in the basin are: Columbia River Gorge and Silver Falls State Park east of Salem.

Class V Lands - Wilderness and Primitive Areas - Areas consisting of large roadless tracts with little or no recreational development other than trails. Use of these areas is very light - about one visit per acre per year. Examples of Class V areas in the basin area: Mt. Jefferson Wilderness and Three Sisters Wilderness in the Cascade Range.

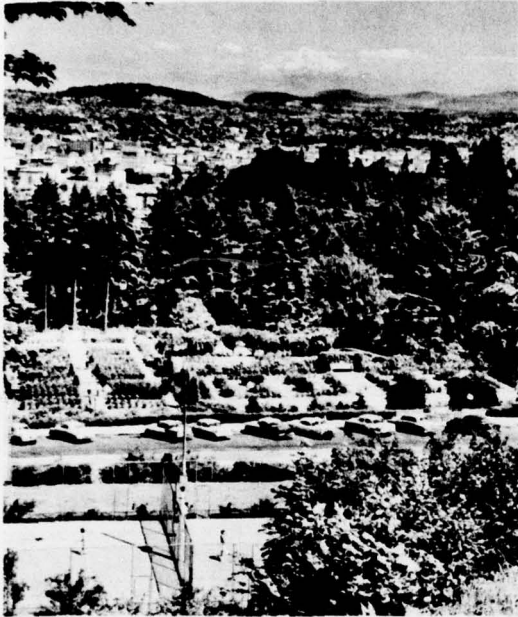
Class VI Lands - Historic and Cultural Sites - Sites associated with history, tradition, and cultural heritage, and preserved for this purpose. Developments include good access to the area, but on-site development is limited to prevent overuse and should not detract from historic or cultural values. Annual visitation capacity of Class VI areas is similar to Class I lands - about 3,000 visitors per acre. Examples of Class VI areas are: Champoege State Park on Willamette River, and Willamette Stone State Park in Portland.

Table II-2 shows the acreage of recreation land, by subarea, classified according to BOR standards.

Table II-2
Recreation land classification by subarea, 1963
(acres)

Subarea	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>Total</u>
Upper	188	19,271	1,666,527	43	194,500		1,880,529
Middle	1,816	19,382	1,612,062	7,864	57,520	188	1,698,832
Lower	<u>2,151</u>	<u>12,512</u>	<u>745,707</u>	<u>21,482</u>	<u>2,320</u>	<u>2</u>	<u>784,174</u>
Willamette Basin	4,155	51,165	4,024,296	29,389	254,340	190	4,363,535

Recreation Land



CLASS I

HIGH DENSITY RECREATION AREA

Tennis courts and rose gardens - Washington Park, Portland.



CLASS II

GENERAL OUTDOOR RECREATION AREA

Sailing enthusiasts - small lake in the Cascades.



CLASS III

DISPERSED RECREATION AREA

McKenzie River - 36 miles east of Eugene.

Classes



CLASS IV

UNIQUE NATURAL AREAS

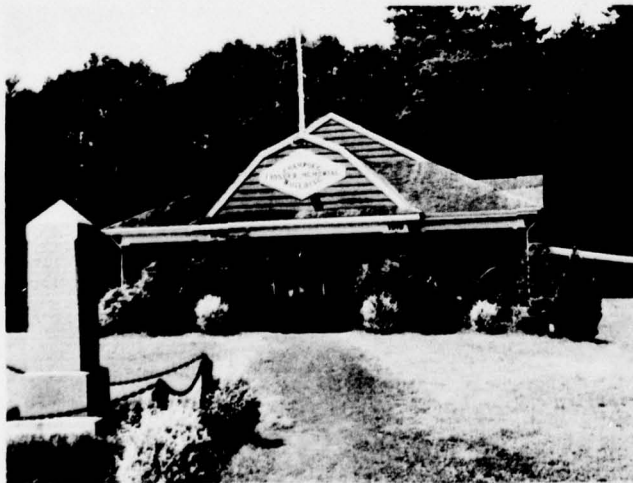
South Falls, Silver Falls State Park - 22 miles east of Salem.



CLASS V

WILDERNESS AND PRIMITIVE AREAS

Backpacking - through the Three Sisters Wilderness



CLASS VI

HISTORIC AND CULTURAL SITES

Site of meetings of early settlers and trappers - Champoeg State Park.

Willamette Basin contains many specialized and unique areas that have been set aside for the benefit of present and future generations. Table II-3 lists those areas on national forest land.

Table II-3
Classified areas of national forest lands, 1968

<u>Wilderness System</u>	<u>Total Acreage</u>	<u>Net Acreage within Basin</u>
Diamond Peak Wilderness	35,440	16,200
Mt. Hood Wilderness	14,160	2,320
Mt. Jefferson Wilderness	99,632	66,174
Mt. Washington Wilderness	46,655	38,030
Three Sisters Wilderness	196,708	136,833
Total	392,595	259,557
<u>Classified Recreation Areas</u>		
Little Crater Geological		5
Lowder Mountain Geological		140
Mt. Hood Recreation		30,720
Quaking Aspen Swamp Botanical		240
Rebel Rock Geological		700
Yankee Mountain Scenic		490
Waldo Lake Recreation		32,600
Columbia Gorge Recreation Area		28,787
Total		93,682
<u>Classified Unique and Natural</u>		
Gold Lake Bog Natural Area		463
H. J. Andrews Experimental Forest		15,000
Olallie Ridge Natural Area		720
Wildcat Mountain Natural Area		1,000
Total		17,183
Total Classified Acreage		370,422

The recently enacted National Trails System Act established a national system of recreation and scenic trails. One of the initial trails established was the Pacific Crest Trail, extending for 2,350 miles along the mountain ranges of the west coast from Mexico to Canada. This trail generally follows the crest of the Oregon Cascades along the eastern boundary of the Willamette Basin. The National Trails System Act also provides for the study of the Oregon Trail and the Lewis and Clark Trail, among others, to determine their potential as national scenic trails.

WATER

Willamette Basin contains many sparkling streams and clear lakes which appeal to the recreationist. The water surface area of the basin is about 106,000 acres, on streams wider than 1/4 mile and on lakes and reservoirs larger than 40 acres. The Willamette and Columbia Rivers account for all of the stream surface within this total.

The basin contains over 550 small natural lakes (less than 10 acres surface area). Most are in the Cascade Range. Although some lakes have good road access and recreational facilities, the majority of the smaller lakes are accessible only by trail and receive very light recreation use. There are 28 major reservoirs in the basin.

Sloughs, oxbows, and borrow pits provide most of the warm water fishing in the basin, exclusive of the Columbia and Willamette Rivers.

Farm ponds and small irrigation reservoirs provide recreation opportunities, mainly for the owners and their families. They range in size from less than an acre up to 40 or 50 acres. The 1964 Agricultural Census shows that about 2,000 farms have constructed ponds with a total surface of 3,200 acres. In 1966, 529 of these ponds were stocked for fishing, an increase of 50 since 1965.

Besides the major rivers--the Willamette and Columbia--the basin contains thousands of miles of smaller streams. These vary from slow, meandering valley bottom streams to swift-flowing mountain streams. Most of the basin streams are of high water quality and provide excellent opportunities for stream-oriented outdoor recreation activities.

The recently enacted Wild and Scenic Rivers Act established a system of national rivers and provided for studies of other rivers proposed for addition to the system. At the present time, none of the rivers within Willamette Basin have been proposed for addition to the national wild and scenic rivers system. However, it is possible that some of the basin's rivers could meet the criteria established by the act.

Legislation has been introduced in the current State Legislature to establish a State scenic river system. In the event State legislation is enacted, some of the rivers of Willamette Basin might be included in the State scenic river system.

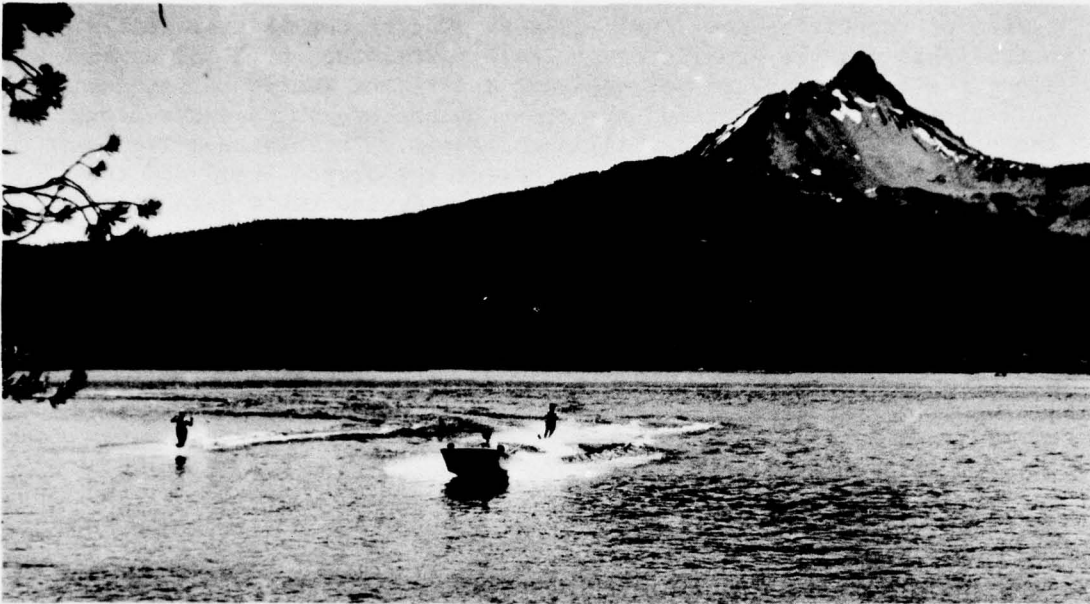
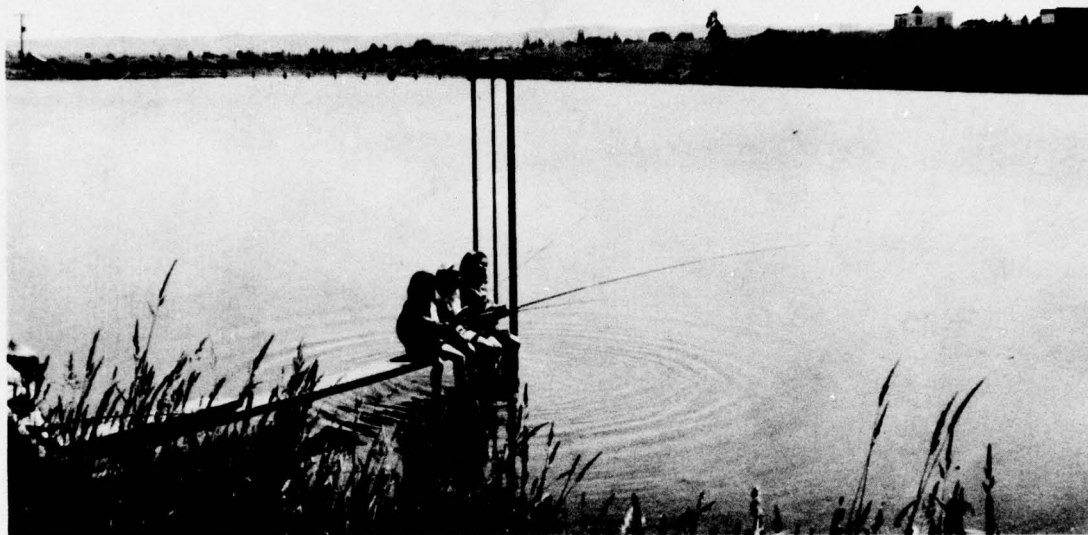


Photo II-4 Natural lakes and reservoirs supply over 50,000 surface acres of water in the basin. (O.S.H.D. Photo)

Table II-4 shows water surface areas and stream miles in the basin by type and size.

Table II-4
Extent of water surface areas and stream miles, 1964
by subarea

Subarea	Lakes and Farm Ponds Less than 10 Acres		Reservoirs and Lakes Greater than 10 Acres		Rivers and Major Streams
	Number	Acres	Number	Acres	Miles
Upper	474	1,068	120	33,710	859
Middle	2,190	2,593	28	9,630	843
Lower	924	1,117	24	10,150	498
Willamette Basin	3,588	4,778	172	53,490	2,200



*Photo II-5 Farm ponds are often stocked for family fishing.
(SCS Photo)*

EXISTING FACILITIES

As a whole, Willamette Basin has sufficient recreational facilities to meet the present demand. However, they are not optimally distributed with respect to the demand. The percentage of demand satisfied by the existing facilities is presented, by subarea, in Table II-5.

Table II-5
*Demand satisfied by existing (1963) facilities,
by subarea*

<u>Subarea</u>	<u>Demand</u> (1,000's of Recreation-Days)	<u>Existing Facility</u> <u>Capacity</u>	<u>Demand</u> <u>Satisfied</u> (percent)
Upper	3,007	4,086	137
Middle	7,566	5,965	79
Lower	<u>10,635</u>	<u>11,747</u>	<u>110</u>
Willamette Basin	21,208	21,798	103



Photo II-6 There are approximately 850 camping and picnicking sites in the basin. (O.S.H.D. Photo)

In Table II-5, the percent of demand satisfied is computed from known demand and capacity data for camping and picnicking. It is assumed that the same percentage applies to the remaining outdoor-recreation activities.

Of the 836 camping and picnicking sites in Willamette Basin in 1963, 329 were located in the Lower, 250 in the Middle, and 257 in the Upper Subareas. The supply of these facilities is shown, by subarea, in Table II-6.

Table II-6
Camping and picnicking facilities, 1963
by subarea

Subarea	Number of Sites	Number of Family Units			Total
		Picnic	Tent	Trailer	
Upper	257	1,275	744	99	2,118
Middle	250	3,434	589	43	4,066
Lower	329	4,452	664	112	5,228
Willamette Basin	836	9,161	1,997	254	11,412



Photo II-7 Numerous public and private ramps provide boat access to many of the basin's streams, lakes, and reservoirs. (O.S.H.D. Photo)

Boat moorages, marinas, and ramps located throughout the basin facilitate recreational boating and water skiing. In 1965, 32 moorages on Columbia and Lower Willamette Rivers provided tying-up facilities for about 2,000 boats. In addition, 93 public ramps and numerous private ramps provide access to the basin's streams, lakes, and reservoirs. Boat moorages and ramps in the basin are listed in Addendum B.

PLANNING AND MANAGEMENT AGENCIES

There are more than 20 Federal, State, and local agencies involved in outdoor recreation planning and management in the Willamette Basin. A brief discussion summarizing the activities of the major agencies is listed in Addendum C.

ACCESSIBILITY

Willamette Basin is served by an extensive road and highway system. Interstate highways traverse the basin from Portland to Cottage Grove and follow the Columbia River Gorge east from Portland to points outside the basin. There are also five north-south and nine east-west U. S. and State highways. Secondary paved roads serve most rural areas. Many access roads to forested areas, required for logging operations, fire control, and other purposes, are also available for use by recreationists. Because Interstate 5 is not conveniently located with respect to many of the basin's scenic areas, many out-of-Staters traveling this route are unaware of the available recreation opportunities.

Recreation sites in the basin are easily reached from the major population centers. Most state parks and Corps of Engineers reservoirs are served by primary roads. Many recreation areas in the Mt. Hood and Willamette National Forests, and the Bureau of Land Management and private recreation sites as well, are accessible by secondary roads. Trails provide access to the most primitive areas.



Photo II-8 State Highway 22 provides scenic access across the Willamette Basin from the Cascades to the Coast Range. (O.S.H.D. Photo)

Most recreation areas in the Willamette Basin accessible by road can be reached from any other point in the basin in not more than three or four hours. Travel times from the population centers of Portland, Salem, and Eugene to selected recreation areas in the basin are shown in Table II-7.

Table II-7
*Travel times from major population centers
to selected localities*

<u>Destination 1/</u>	<u>Time (Minutes)</u>		
	<u>Portland</u>	<u>Salem</u>	<u>Eugene</u>
Mt. Hood (Sandy)	105	150	210
Timothy Lake (Clackamas)	120	130	190
Silver Creek Falls State Park (Pudding)	75	30	90
Detroit Lake (Santiam)	95	50	100
Foster-Green Peter Reservoirs (Santiam)	105	60	70
Cascadia State Park (Santiam)	105	60	70
Sodaville State Park (Santiam)	90	45	70
Santiam Pass (Santiam)	165	120	120
Fern Ridge Reservoir (Long Tom)	140	80	20
Cottage Grove Reservoir (Coast Fork)	150	90	30
Dorena Reservoir (Coast Fork)	145	85	25
Lookout Point-Dexter Reservoirs (Middle Fork)	145	85	25
Hills Creek Reservoir (Middle Fork)	165	105	45
Waldo Lake (Middle Fork)	210	165	105
Willamette Pass (Middle Fork)	210	165	105
Armitage State Park (McKenzie)	105	60	20
Hendricks Bridge State Park (McKenzie)	135	90	30
Harris State Park (McKenzie)	155	110	50
Cougar Reservoir (McKenzie)	195	135	75
McKenzie Pass (McKenzie)	195	150	120

1/ Parentheses indicate subbasin



Beauty, spiced with wonder, is the greatest lure to travel.
Confucius, 591-479 B.C.

RECREATION USE

USER TRENDS

Recreation habits are changing. Land-management agencies report the length of stay is shorter. Some activities are becoming more specialized, requiring expensive and specialized equipment. Demands for equipment to make camping less rustic have prompted manufacture and sale of luxurious camping gear and travel conveyances. Also, there has been a spectacular growth in motorized equipment, such as motor bikes, and snowmobiles. Some modification of the natural scene for such services as showers, hot water, electricity, and flush toilets increases the construction and maintenance costs of recreational facilities. With a rise in disposable income, basin residents are spending more money on transportation and recreation.

ORIGIN OF USE

Surveys at three State parks in the basin showed that the majority of day users came from within 50 miles while the bulk of overnight users came from more than 50 miles away.



Photo II-9 The use of oversnow vehicles for outdoor recreation is increasing rapidly. (Dick Bolding Photo)

The distance that visitors travel for recreation was one item determined in a 1964 survey of several Corps of Engineers reservoirs in the Upper Subarea. The percentages of total visitation emanating from various distances, shown in Table II-8, are indicators of people's willingness to travel to recreational attractions.

Table II-8
*Distance traveled to Corps of Engineers reservoir projects,
by percent of total visitors, 1964*

<u>Reservoir</u>	<u>Distance Zones (Miles)</u>				
	<u>0-25</u>	<u>26-50</u>	<u>51-75</u>	<u>76-100</u>	<u>100+</u>
Fern Ridge	90	6	1	1	2
Cottage Grove	62	31	3	1	3
Dorena	48	37	8	2	5
Lookout Point-Dexter	73	14	5	1	7
Hills Creek	55	20	14	3	8
Cougar	14	58	9	7	12

All these reservoirs received at least 70 percent of their visitation from less than 50 miles away, much of it presumably from Eugene-Springfield, indicating that they are not used much by people from the Middle and Lower Subareas. Over half the visitors to Hills Creek were from less than 25 miles away, in spite of a small local population.

Out-of-state and out-of-basin use of the more remote sites varies considerably among the three subareas. National forest and state park statistics show that out-of-state use far exceeds the use by Oregon residents not living in the basin.

LENGTH OF STAY

Generally, day use is increasing at a faster rate than overnight use. Increased accessibility and mobility help explain this trend. Many out-of-basin users are attracted for overnight use. Table II-9 shows the trend for average length of stay between 1950 and 1960 for national forest areas in the basin. This downward trend is expected to continue in the future.

Table II-9
*Average length of stay, national forest areas
(days)*

<u>Type of Site</u>	<u>1950</u>	<u>1960</u>
Campgrounds	2	1
Organization Camps	3-3/4	3-1/2
Commercial Public Service Sites	2-3/4	2-1/4
Recreation Residence Site	7-1/2	6-1/4
Wilderness Areas	3-1/4	2-1/4

On the average, users are staying for shorter periods in all parts of the basin. Fifty years ago, a caravan of cars would journey from Portland for a long day's outing at Eagle Creek picnic area in the Mt. Hood National Forest; today, a picnic in the same area may last only three or four hours, including transportation time.

ACTIVITY PARTICIPATION

Constant changes in activity participation are taking place. Swimming, wilderness use, hunting, and boating have increased greatly between 1950 and 1960. Urban activities such as playing games, walking for pleasure, and attending outdoor events have also increased considerably. Changes in activity participation on national forest areas in the basin, shown in Table II-10, are representative of most non-urban areas, including the large private forest holdings.

The abundant supply of water surface available on lakes and reservoirs in the Middle and Upper Subareas is responsible for a large increase in water-oriented recreation.

VISITATION

Total visitation in the Willamette River Basin reported in 1963 was 21.4 million. Of this total, about 13.2 million were to city and county areas, about 3.5 million each to national forest and State-administered areas, 1.1 million to Corps of Engineers reservoirs, and 86,000 to Bureau of Land Management areas. Visitation to private areas and to some Bureau of Land Management areas was unreported. Visitation by subareas and managing agency is shown in Table II-11.

Table II-10
*Changes in activity participation
on national forest lands between 1950 and 1960*

<u>Purpose of Visit</u>	<u>1950 Visits</u>	<u>1960 Visits</u>
Camping	35,950	249,100
Picnicking	239,900	498,600
Swimming	2,600	29,800
Winter Sports	222,100	315,000
Hunting	10,500	59,300
Fishing	58,100	413,500
Hiking and Riding	12,000	41,100
Boating and Water Sports	1,150	28,450
Organized Camping	9,800	14,600
Wilderness Travel	3,000	14,700
Sightseeing	322,500	1,869,000
Gather Forest Products for Pleasure	110,650	35,700
Scientific Study	2,050	7,150
Other Activities	<u>3,100</u>	<u>21,000</u>
Total	1,033,400	3,597,000

Table II-11
*Visitation at recreation sites, 1963
by subarea*

<u>Agency</u>	<u>Lower</u>	<u>Middle</u>	<u>Upper</u>	<u>Total</u>
	(1,000's of visitor-days)			
Forest Service	2,338	505	713	3,556
Bureau of Land Management	N/A	86	N/A	86
Corps of Engineers	675	-	425	1,100
State of Oregon	1,710	1,102	654	3,466
City-County	6,145	5,212	1,833	13,190
Private	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	10,868	6,905	3,625	21,398

ECONOMIC IMPACT OF OUTDOOR RECREATION

One out of every two dollars spent nationally on outdoor recreation is for vacation, overnight trips, and outings. However, in the Pacific Northwest tourist expenditures are about twice the per capita national average. Because of the wealth of recreation resource, Northwesterners vacation more in their own region than do residents of other regions. Also, more money is spent by nonresidents visiting the Pacific Northwest than is spent by Northwesterners traveling in other regions. In terms of employment, tourism is the fourth-ranking industry in the Pacific Northwest.

The total outdoor recreation participation in Oregon during 1963 was about 45 million visits, and about \$571.5 million were spent. During the same year, the total participation in Willamette Basin for outdoor recreation was 21,400,000 visits, 47 percent of the State total; these figures include visitation at Federal, State, county, and local public areas, but do not include visits to private recreation enterprises. It is estimated that the total outdoor recreation expenditure in Willamette Basin in 1964 was \$268.6 million.

In addition to the input into the economic stream, outdoor recreation provides a direct benefit to the user in the form of tangible and intangible values. The intangible benefits associated with wild or primitive areas, areas of scenic, historical and scientific interest, and rare species and their habitat are all a part of the recreation experience an individual receives. Recreation use in Willamette Basin covers a wide range of activities, from urban uses such as playgrounds and outdoor spectator events to hiking in the high Cascades.

To measure all the intangible benefits in terms of dollars and cents is impossible, but monetary values for tangible benefits of recreation use can be measured by criteria set forth in Supplement No. 1, Senate Document 97. The range of unit-day values listed for a general type of outdoor recreation day is from \$.50 to \$1.50. Since visitation in Willamette Basin in 1963 was just over 21 million, the monetary value of outdoor recreation to the users for 1963 would be \$10.5 million if each visit is considered an average 50-cent recreation day.

About \$18.5 million were spent by Federal, State, and local governments for planning, development, operation, maintenance, and administration of recreation facilities and areas in Oregon (Fiscal Year 1963-64). Of this total, about \$5.6 million were spent in Willamette Basin. These expenditures added directly to the economy by providing goods and services.

Quality of the environment, like freedom, must be protected and achieved anew by each generation.

Laurence S. Rockefeller



Photo II-10 The \$268,600,000 annually spent on outdoor recreation and tourism in the basin is a tangible benefit. The intangible benefits are beyond assessment. (U.S.R.O.R., U.S.F.S., O.S.H.D., and Jantzen Photos)

PRESERVATION OF IRREPLACEABLE VALUES

Willamette Basin possesses natural, scientific, and historic recreation resources of regional, State, and local significance. Many of these resources are irreplaceable and, if destroyed, cannot be duplicated or replaced in kind. Some of these have been preserved, assuring that they will provide future opportunity for public use and enjoyment. Other recreational resources, such as the rivers, are endangered by proposals which would alter the streamflows for purposes of flood control, irrigation, power, and other functions. Once altered, the streams in many cases lose the qualities which make them attractive.

The natural and scientific resources include the forest-covered slopes, mountain lakes and meadows, sparkling streams, and rugged mountains. Numerous historical sites have also been marked.

Interest and participation in outdoor recreation activities oriented around natural, scientific, and historical resources have increased rapidly. Greater public understanding and appreciation of these resources have influenced this rapid growth.



Photo II-11 Wild flowers and shrubs attract visitors to Laurel Hill on the Mt. Hood Loop Highway. (O.S.H.D. Photo)

NATURAL RESOURCES

B

Willamette Basin is an area of lush, green forests, rugged mountains, and clear, swift-flowing streams. Features of scientific interest in the basin include the geologic phenomena associated with the formation of the Cascade Range, the glacial period during which many of the river channels were formed, and the evolution of its plant and animal life. Hot springs scattered throughout the basin attest to volcanic activity and are the source of much enjoyment. Some of the more significant are: (1) Austin Hot Springs, on Clackamas River; (2) Bagby Hot Springs, on Collawash River; (3) Belknap Hot Springs, on McKenzie River; (4) Breitenbush Hot Springs, on Breitenbush River; and (5) McCredie Hot Springs, on Salt Creek. Although these do not possess the grandeur of the hot springs in Yellowstone National Park, their demise would result in significant recreation values being lost forever.

Recreation is no longer simply having fun. Rather, it involves the kind of America we have, and want to have, and the kind of people we are and are likely to become.

Laurence S. Rockefeller

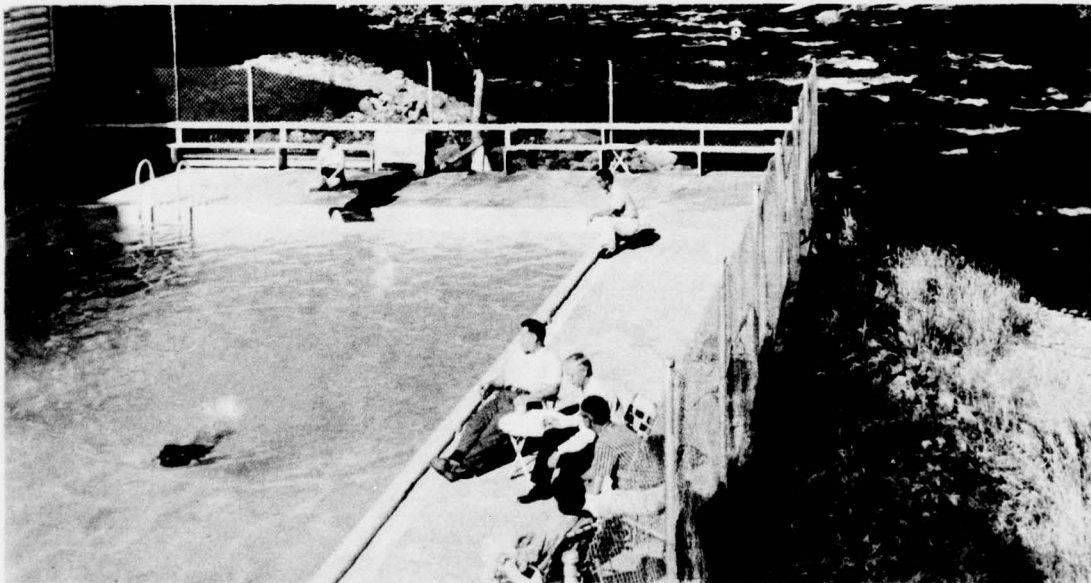


Photo II-12 Belknap Hot Springs on McKenzie River. (O.S.H.D. Photo)

Fish and wildlife still abound in the Willamette Basin. However, habitat for many species native to the basin has been so reduced or altered that populations are now far below those once existing; anadromous fish and migratory waterfowl are examples. When the number of animals is reduced by factors other than natural environment (such as overharvest) or by disease, they can be increased by regulation and management until environmental equilibrium is again reached. When the reduction occurs as a result of habitat destruction, however, the change is irreversible unless habitat is restored.

Many recreationists feel that the quality of stream fishing cannot be replaced by reservoir fishing. They also feel that certain streams, such as the McKenzie, should be protected to maintain free-flowing white water areas.

A few areas have been recognized for their unique vegetational characteristics. These include: (1) The West Linn Camassia Natural Area; (2) Quaking Aspent Swamp Botanical Area, Willamette National Forest; (3) Sugar Pine Unusual Interest Area, Mount Hood National Forest; (4) Gold Lake Bog Research Natural Area, Willamette National Forest.

The streams, forests, and mountains in the basin provide outstanding scenic attractions. Driving on the many roads and highways enable the visitor to enjoy many of these features from his car. For the more venturesome, the wilderness of the high-mountain country presents an opportunity to observe the natural environment.



*Photo II-13 The annual McKenzie River White Water Parade attracts large numbers of participants and spectators.
(O.S.H.D. Photo)*



Photo II-14 Many scenic stops lure the traveler along the scenic highways through the Cascade Range. (O.S.H.D. Photo)

PALEONTOLOGY

Paleontologists have found evidence that mammoths and other large mammals roamed the Willamette Basin until after the end of the last glacial period 14,000 to 16,000 years ago. Some mastodon and elephant fossils have been found near Chamboeg at the base of silts deposited during the Pleistocene epoch.

Three instances indicate that man may have hunted the mammoth in Willamette Basin. In 1895, spear points of a type now associated with early man were found in a drainage ditch near Tangent; mammoth bones were also reportedly found near this place. In 1941, near Lebanon, part of a mammoth skeleton was found in association with a scraping tool chipped from jasper. Recently, a mammoth skeleton allegedly associated with bone tools was discovered in the Portland West Hills.

Let us, while waiting for new monuments, preserve the ancient monuments.

Victor Hugo, 1802-1885

ARCHEOLOGY

The human prehistory of an area, derived through the study of data obtained from archeological investigations, occupies an important place in the overall recreation picture. Preservation of outstanding archeological features will enable present and future generations to understand and appreciate the prehistory of the basin.

The majority of Willamette Basin's archeological sites are located in the Willamette River flood plain. Recent surveys and excavations indicate that more sites may be discovered in the foothills and stream valleys.

Indian mounds constitute the most prevalent archeological features. These mounds characteristically are elevated above the surrounding territory, sometimes only slightly, but apparently high enough to be unaffected by high water. They are most easily recognized by the dark humic-appearing soil of which they are composed, seemingly found only on these archeological sites. Mounds occur along the Yamhill River, Calapooya River near Tangent, Shedd, and Halsey, Muddy Creek, and Willamette River near Harrisburg. In the Lower Subarea, there are sites reportedly having the characteristics of middens or refuse heaps.

Other archeological sites in Willamette Basin include caves or rock shelters. Only a few are known to exist on the slopes of the Cascade Range and the Calapooya Mountains. The importance of these sites as recreation resources centers around research and interpretation. Future construction activity will no doubt destroy some sites, so provisions should be made far enough in advance to salvage information contained therein.

The basin was the territory of numerous Indian tribes. Since 1880, hobbyists collecting arrowheads and other choice artifacts have heavily exploited such areas as Sauvie Island, Dairy Creek near Forest Grove, and Willamette Falls. The main village of the Tualatin Indians at Wapato Lake near Gaston has long since been destroyed. Several small sites have been found on Scoggins Creek. Patton Valley along the Tualatin River contains archeological sites, petroglyphs (rock carvings), and Indian trails. A cave and nearby petroglyphs in the authorized Cascadia reservoir project area, and a site on the Luckiamute River are other kinds of archeological values in the basin.

Some areas of archeological importance in the Upper Subarea are within Fern Ridge, Fall Creek, Dorena, and Cottage Grove Reservoirs. Some of these could be excavated during low water periods. Dams at Thurston and Mohawk sites would affect areas from which hobbyists have collected quantities of Indian artifacts.

Pictographs are known to exist in a cave on Staley Creek in the vicinity of Hills Creek Dam.

*It has been said that a nation that has no past has no future,
and the nation that does not treasure the relics of its past
does not deserve the future.*

Unknown

HISTORY

Willamette Basin is important in recent history because it was the first region in the Pacific Northwest to be colonized in the course of westward expansion. Historic sites in the basin trace the exploration, settlement, and development of the area since 1792. Events, people, and eras are represented in currently marked or developed areas. Houses, graves, trails, townsites, and institutions illustrate the kinds of sites found in this historic Pacific Northwest valley.

The Lewis and Clark Expedition missed discovering the Willamette Valley as they canoed down the Columbia River in the fall of 1805. The following spring, on the return trip, Captain Clark led a small party which found the mouth of the Willamette and traveled about as far upstream as present-day downtown Portland.

The first steps in local political development culminated in a series of mass meetings at what is now Champoege State Park. During a meeting of May 2, 1843, settlers voted to establish a provisional government. Oregon City, located at Willamette Falls, was the seat of the Provisional Government of Oregon until 1848, and the Territorial Capital from 1848 to 1852. McLoughlin House National Historic Site is located in Oregon City.

Some of Portland's oldest extant commercial structures, brick buildings with cast-iron fronts dating from the 1870's are in the Skidmore Fountain district near the waterfront. The old Oswego Iron Company foundry, at the mouth of Oswego Creek, was casting iron as early as 1867. A massive stone chimney marks the site of the first such operation west of the Rockies.

Mount Hood loop highway follows the approximate route of the historic Barlow Trail which was the wagon route into Willamette Valley from The Dalles.

The Minthorn House in Newberg was the boyhood home of the 31st President of the United States, Herbert Hoover. The Yamhill Valley contains some of the oldest towns in the Willamette Basin. Dayton, founded by General Joel Palmer in 1848, has in its central square the Fort Yamhill Blockhouse. McMinnville, Yamhill County seat, is the location of Linfield College. Old Pioneer Hall stands as a landmark on the campus and is a remarkable example of the architecture of 1883.

The Methodist Mission established on the east bank of the Willamette south of French Prairie by the Rev. Jason Lee in 1834, was the first missionary enterprise in the Pacific Northwest. The Indian Manual Labor Training School and the Oregon Institute that they established at Salem eventually merged and evolved as Willamette University, which claims to be the first institution of higher education west of the Rockies.

The interpretive themes of the Methodist Mission in Oregon and the woolen industry in Oregon are to be treated in the Thomas Kay Historical Park project now under development in Salem. The Thomas Kay Woolen Mill now standing was built in 1896; it is intact with its water power facility. The Jason Lee House and the Methodist Parsonage have been relocated to the back of the park site and are undergoing restoration. The home of Asahel Bush, the founding editor and publisher of the Oregon Statesman, is operated as a museum by the Salem Art Association and the City of Salem.

Historic sites in the upper Willamette Basin include: Deady Hall (1876) and Villard Hall (1883) on the University of Oregon campus; Willamette Pass where the present highway occasionally follows the old Willamette Military Road; Cottage Grove--the center of departure for nineteenth century miners; and the famous Bohemia Mining District. The many covered bridges in the Upper Subarea are important attractions for sightseers.

Happy he, who with bright regard looks back upon his father's fathers, who with joy recounts their deeds of grace, and in himself, values the latest link in the fair chain of noble sequence.

Johann Wolfgang Van Goethe, 1749-1832

P R O B L E M S

Since the management of outdoor recreation resources is a field involving not only the management of land but also the management of people the problems are varied and complex.

COMPETITION FOR LANDS ADJACENT TO WATER RESOURCE

Attractive water frontage sites desirable for recreation are often the ones sought for residential subdivisions. Once this type of interest develops, land price escalation makes acquisition for public recreation use difficult. Lack of financing often prevents local government from acquiring potential recreation water frontage areas prior to actual need.

Locations adjacent to water bodies are attractive to industry because of transportation, industrial water supply, and waste disposal opportunities. Industrial developments not only cover extensive waterfront areas, but often conflict with recreational use of the water areas. Commercial encroachment on existing scenic areas and park lands adds to the problem of site acquisition.

Access to many of the basin's public lands, lakes, and streams for recreational use is restricted by private ownership. Condemnation of rights-of-way to gain access is a slow, expensive but often necessary procedure. These problems may be eased in many instances through advance planning and a program of acquisition of land or options to help curtail land speculation.

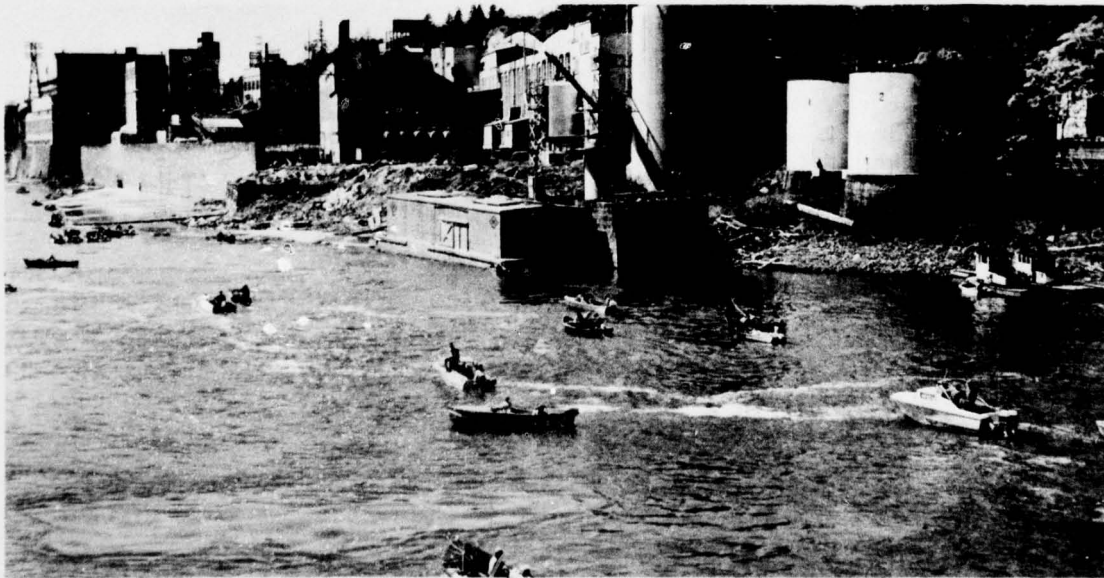


Photo II-15 Outdoor recreation must compete with other uses of water resources. (O.F.C. Photo)



Photo II-16 Conflicting water uses often result in extreme reservoir drawdown detrimental to outdoor recreation activities. (U.S.B.O.R. Photo)

CONFLICTING RESERVOIR WATER DEMANDS

Outdoor recreation competes with other needs for water. Stable reservoir water levels, ideal for recreational use, are not compatible with drawdowns required for irrigation, power, water quality, and downstream fisheries' flows. Irrigation demands occur during the summer months when the need for outdoor recreation is at its peak. There is a need to increase minimum flows in the rivers below storage impoundments to enhance recreation use and to maintain fish habitat.

COMPETITION FOR WATER AMONG RECREATION USES

Strong competition is developing for the use of both natural lakes and reservoirs among various recreation user groups--general boating, water skiing, sport fishing, swimming, canoeing, and those seeking the peace and solitude of the waterside. With the increase in power boats, problems are becoming severe at many of the existing water bodies.

No one has a right to use America's rivers and America's waterways that belong to all the people as a sewer. The banks of a river may belong to one man or to one industry or one state, but the waters which flow between those banks should belong to all the people.

Lyndon B. Johnson

RESERVOIRS VS. FREE-FLOWING STREAMS

There is a need to maintain certain rivers in their free-flowing state because of their scenic, aesthetic, and natural recreational values. Multipurpose reservoir construction generally provides new recreation facilities and opportunities, but it often destroys existing recreation areas, wildlife habitat, fish-spawning gravels, and other natural resources. Careful evaluation of each proposed project is essential in order to prevent impairment to the resources. Headwater impoundments can often enhance stream recreation by regulating the flow.

SILTED WATERS AND INDUSTRIAL WASTES

Improperly constructed logging roads and dams will contribute significant quantities of sediment to the waters in the basin. Wild-fire and forest and agricultural slash fires destroy ground cover over large acreages each year, permitting soil, ash, and charred debris to be carried into the streams to the detriment of water quality.

Gravel-mining operations are extensive in the basin's rivers, contributing great quantities of sediment and discoloring the water. Dirty water loses its scenic attraction and damages fish habitat. Floating and suspended solids in the Willamette River and other streams result from improper treatment of food-processing wastes and discharges from pulp and paper mills. The abatement of these pollutants is slow and expensive.



Photo II-17 Floating and suspended solids result from improper treatment of industrial wastes. (O.S.H.D. Photo)



Photo II-18 Contamination by recreationists detracts from the aesthetic value of many sites. Badly needed recreation development money must be spent to clean up after careless visitors. (Dick Fording Photo)

CONTAMINATION BY RECREATIONISTS

There is a danger of both land and water pollution where the public is using underdeveloped recreation areas. This problem will become more severe in the future as the number of users grows.

Disposal of wastes from pleasure boats is a problem due to carelessness and the lack of adequate shore-based facilities for disposal. This waste contaminates the water or fouls the shoreline. Little is being done to construct disposal facilities specifically to meet this need.

AIR POLLUTION

Air pollution is a growing problem. Industrial operations are contributing to the already polluted atmosphere. Exhausts from cars, airplanes, trucks, and trains continue to contaminate. Burning stubble fields and logging slash add quantities of pollutants to the air.

We have misused our land and allowed our wastes to pollute and destroy our air and waters. Mankind must change its ways or accept the very real prospect of extinction.

Congressman John D. Dingell, Michigan

MUNICIPAL SUPPLY

Often municipal watersheds are closed to recreation use to protect domestic water supplies. Because of the increasing need and public demand for recreation, multiple use of these watersheds, especially those within the day-use zone of major population concentrations, is needed. In the Portland area, the Bull Run watershed with its several large lakes and rivers could contribute significantly in supplying needed recreation. In other parts of the country, such watersheds are being considered for recreation use as well as other purposes.

FINANCING AT THE LOCAL LEVEL

One of the greatest problems is financing outdoor recreational development. Most programs are behind demand schedules at the present time. While the Federal government has recently initiated several grants-in-aid programs to assist State and local governments in acquisition and development (such as the Land and Water Conservation Act, the Federal Water Project Recreation Act, and the Housing Act of 1961), there is still a need for additional financial assistance. Some local governments have passed bond issues to provide funds to match Federal grants. While the results have been noteworthy, there is still a serious shortage of funds to meet needs and goals at the local level.

PRIVATE SECTOR

In Willamette Basin, there are only a few successful private recreation enterprises, such as farm fish ponds and hunting areas. Some of the best opportunities for private investment lie in recreation services--motels and trailer parks, hunting areas, farm fish ponds, resorts, winter sports areas, and marinas.

A serious problem to the use of private lands for recreation is the owner's potential liability. The owners cannot contract away liability under interpretation of present state law. Relief from liability would encourage private landowners to open their lands to public use.



Photo II-19 Private land is often closed to public recreation use because of past carelessness or malicious damage by visitors. (U.S.B.O.R. Photo)

OVERUSE, MISUSE, AND VANDALISM

The popularity of certain recreation areas, particularly those close to the metropolitan centers, has caused severe overuse of some sites. This is often compounded by insufficient development of sites and a lack of alternative sites to handle overflow.

Because more recreationists are living in urban environments, there is an increasing lack of understanding of natural environments and simple ecological principles. The result is misuse of many sites, by visitors who simply do not understand. Many thousands of dollars are spent each year repairing damage and cleaning up after thoughtless or uninformed visitors. An intensive public education campaign is a must to obtain understanding and compliance with necessary rules and regulations.

A small percentage of hardcore, malicious vandals mutilate or destroy facilities and natural attractions, spoiling recreation areas for the majority. A few of these individuals can cause enough damage to drastically set back the recreation program of an agency. Funds which could be used to develop new sites often have to be spent to replace or repair vandalized facilities and sites.



Photo II-20 Overuse causes soil compaction, kills vegetation and results in site deterioration. (U.S.F.S. Photo)

ENVIRONMENTAL QUALITY

Rapid urbanization with resultant conversion of agricultural and forest land to other uses, construction of dams, levees, roads, and diversion canals, and channel improvement measures all affect the environmental quality within the basin. Most of these activities, to date, have had detrimental effects on the environment. Environmental aspects have not been given proper consideration in the overall development of the basin.

It is imperative that preservation of environmental quality and environmental enhancement measures become an equal partner in basin planning and development. Unless these factors are considered now, many options will be lost.



Photo II-21 Preservation of environmental quality is a responsibility we must accept in order to protect the legacy of future generations. (O.S.H.D. Photo)

SUBAREA ANALYSES

Our surroundings can enrich or impoverish our lives. Thus, conserving and improving our environment can add immeasurably to private and public happiness.

Hubert H. Humphrey



NATURE TRAILS



WATER SPORTS



CAMPING AND PICNICKING

NATURE STUDY

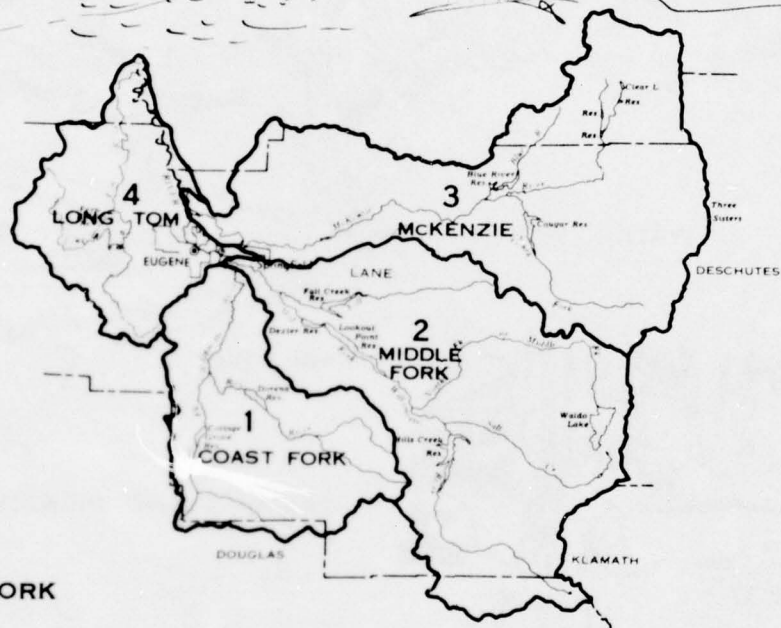


UPPER SUBAREA

LONG TOM



MC KENZIE



COAST FORK



MIDDLE FORK



SUBAREA ANALYSES

UPPER SUBAREA

Population

The population of the Upper Subarea in 1960 was 156,250, an average density of 40 persons per square mile. Table II-12 shows population and density of the Upper Subarea by subbasin.

Table II-12
*1960 population and density
by subbasin, Upper Subarea*

<u>Subbasin</u>	<u>Square Miles</u>	<u>Population</u>	<u>Density</u>
Coast Fork	665	17,000	26
Middle Fork	1,354	9,400	7
McKenzie	1,342	21,500	16
Long Tom	<u>526</u>	<u>108,350</u>	206
Upper Subarea	3,887	156,250	40



Photo II-22 *The Upper Subarea abounds with high mountain lakes and streams. This subarea contains almost two million acres of inventoried recreation land. (O.S.H.D. Photo)*

Visitation

In 1963, total visitation in the Upper Subarea was over 3.5 million recreation days. Over half this total visited city and county areas; in addition, 713,000 visited the national forest areas, 653,000 the State areas, and 425,000 the Corps of Engineers areas. Figures for Bureau of Land Management and private sites are unavailable. About half the total visitation took place in the Long Tom Subbasin.

Resource Capacity

Basic Resource

The Upper Subarea contains 1,880,529 acres of classified recreation land. Table II-13 lists this land resource base by administration and classification. These lands have a capacity to satisfy 8,919,000 recreation days of nonwater-related activities.

Table II-13
*Land resource base by administration
and BOR classification, 1963
Upper Subarea
(acres)*

	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>Total</u>
Private	-	-	385,500	-	-	385,500
Forest Service	12	10,917	1,115,547	-	194,500	1,320,976
Corps of Engineers	22	4,961	13,550	-	-	18,533
BLM	-	1,905	148,335	43	-	150,283
State	41	229	2,663	-	-	2,933
City-County	<u>113</u>	<u>1,259</u>	<u>932</u>	<u>-</u>	<u>-</u>	<u>2,304</u>
Upper Subarea	188	19,271	1,666,527	43	194,500	1,880,529
Capacity (recreation days)						8,919,000

In addition, there are 34,000 surface acres of water and nearly 900 miles of major rivers and streams, with a potential capacity for 21,222,000 recreation-days of water-related activities. Table II-14 shows the basic water resource by subbasin.

Table II- 14
*Water resource base
 by subbasin, Upper Subarea
 1964*

Subbasin	Lakes & Farm Ponds Less than 10 Acres		Reservoirs & Lakes Greater than 10 Acres		Major Rivers & Streams Miles	Water- Related Capacity rec.-days
	Number	Acres	Number	Acres		
Coast Fork	91	97	2	2,960	130	1,650,000
Middle Fork	112	468	55	16,990	248	10,000,000
McKenzie	121	318	56	4,600	223	2,000,000
Long Tom	150	185	7	9,160	124	2,283,000
<u>Willamette River</u>					<u>134</u>	<u>5,289,000</u>
Upper Subarea	474	1,068	120	33,710	859	21,222,000

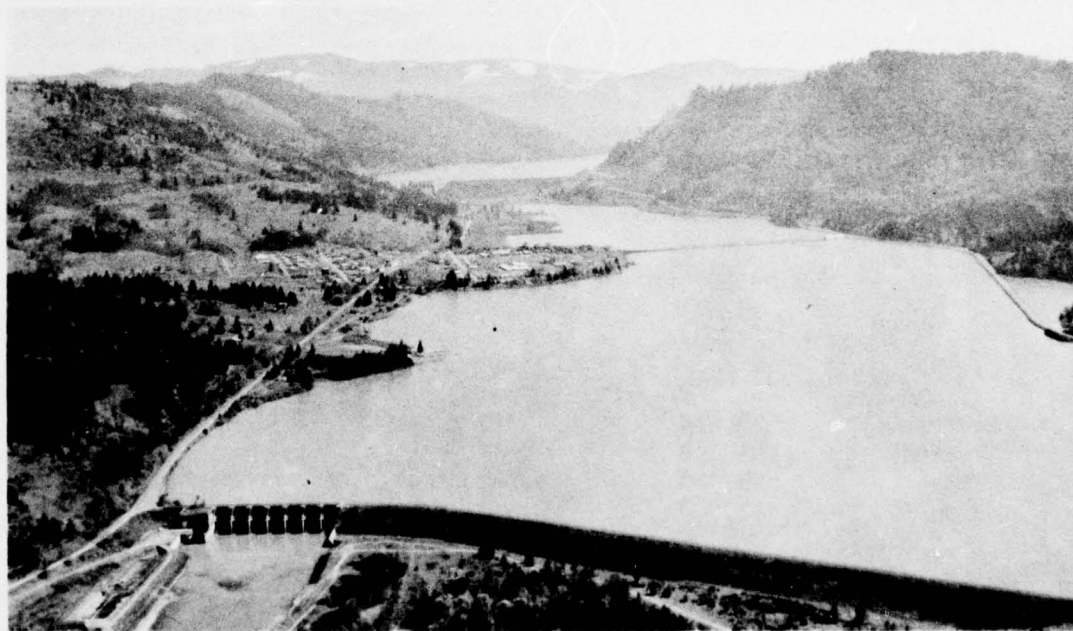


Photo II-23 *Dexter & Lookout Point Reservoirs bring recreation possibilities within 25 miles of Eugene & Springfield. (O.S.H.D. Photo)*

Developed Facilities

There are 257 recreation sites in the Upper Subarea. Almost half of these are in the Long Tom Subbasin, although half the 2,100 family units are located in the McKenzie Subbasin. The existing sites could be expanded to 3,500 family units. Table II-15 lists by subbasin the recreation sites in the Upper Subarea.

Table II-15
*Camp and picnic facilities by subbasin,
Upper Subarea, 1963*

<u>Subbasin</u>	<u>Number of Sites</u>	<u>Number of Family Units</u>			
		<u>Picnic</u>	<u>Tent</u>	<u>Trailer</u>	<u>Total</u>
Coast Fork	20	120	75	-	195
Middle Fork	49	254	265	40	559
McKenzie	78	546	404	59	1,009
Long Tom	<u>110</u>	<u>355</u>	-	-	<u>355</u>
Upper Subarea	257	1,275	744	99	2,118

The subarea is well endowed with outdoor recreation resources, both land and water. However, there are notable deficiencies in amount and location of developed facilities, particularly in the Coast Fork Subbasin. The percentage of present demand which can be satisfied with existing facilities is shown in Table II-16.

Table II-16
*Demand satisfied by present facilities, 1963
Upper Subarea*

<u>Subbasin</u>	<u>Demand</u>	<u>Facility Capacity</u> (recreation-days)	<u>Demand Satisfied</u> (percent)
Coast Fork	626,000	325,000	52
Middle Fork	888,000	1,474,000	166
McKenzie	510,000	1,520,000	298
Long Tom	<u>983,000</u>	<u>767,000</u>	78
Upper Subarea	3,007,000	4,086,000 <u>1/</u>	136

1/ Capacity for water-related activities, 2,768,000 recreation-days.



Conservation and Tinkering

Conservation is a state of harmony between men and land. By land is meant all of the things on, over, or in the earth. Harmony with land is like harmony with a friend; you cannot cherish his right hand and chop off his left...

"The outstanding scientific discovery of the twentieth century is not television, or radio, but rather the complexity of the land organism. Only those who know the most about it can appreciate how little we know about it. The last word in ignorance is the man who says of an animal or plant: 'What good is it?' If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering.

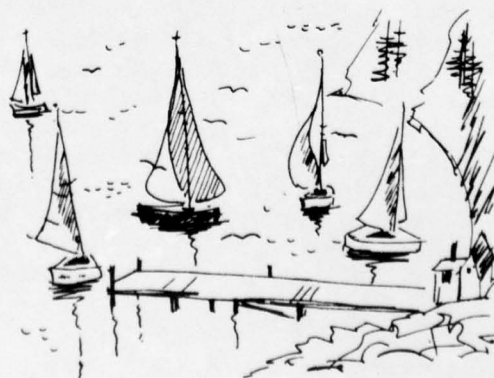
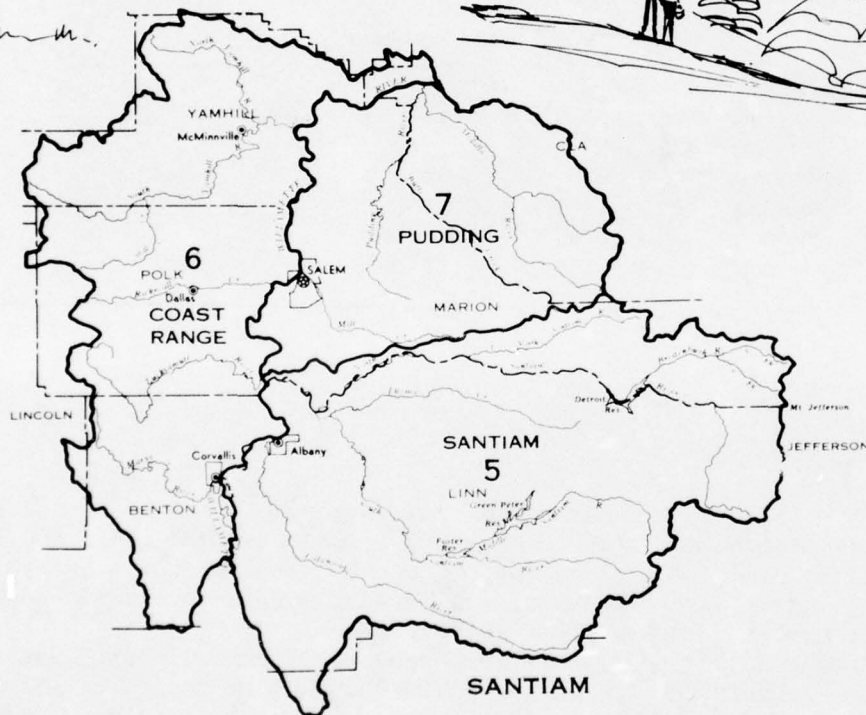
Aldo Leopold, in Round River (Oxford, 1953)

MIDDLE SUBAREA

COAST RANGE



PUDDING



MIDDLE SUBAREA

Population

The population of the Middle Subarea in 1960 was 289,950, an average density of 53 persons per square mile. Table II-17 shows population and density by subbasin.

Table II-17
*1960 population and density, by subbasin,
Middle Subarea*

<u>Subbasin</u>	<u>Square Miles</u>	<u>Population</u>	<u>Density Per Square Mile</u>
Santiam	2,440	65,200	27
Coast Range	1,794	96,950	54
Pudding	<u>1,186</u>	<u>127,800</u>	108
Middle Subarea	5,420	289,950	53



*Photo II-24 Nearly half of the Middle Subarea is in private ownership. An aggressive private outdoor recreation program will be needed to meet future demand.
(O.S.H.D. Photo)*

Visitation

In 1963, total visitation for the Middle Subarea was about 7 million days. Of this total, 5.2 million were to city and county areas, 1.1 million to State areas, about 0.5 million to Forest Service sites, and nearly 0.1 million to Bureau of Land Management sites.

Resource Capacity

Basic Resource

The Middle Subarea contains 1,696,141 acres of classified recreation land. Table II-18 lists this land resource base by administration and classification. These lands have a capacity to satisfy 14,926,000 recreation-days of nonwater-related activities.

Table II-18
*Land resource base by administration
and BOR classification, 1963
Middle Subarea
(acres)*

	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>Total</u>
Private	-	-	820,200	-	-	-	820,200
Forest Service	-	4,316	476,071	-	57,520	-	537,907
Corps of Engineers	-	7,114	-	-	-	-	7,114
BLM	-	5,955	204,655	40	-	-	210,650
State	-	831	110,223	7,824	-	166	119,044
City-County	<u>1,816</u>	<u>1,166</u>	<u>913</u>	<u>-</u>	<u>-</u>	<u>22</u>	<u>3,917</u>
Middle Subarea	1,816	19,382	1,612,062	7,864	57,520	188	1,698,832
Capacity (recreation-days)							14,926,000



Photo II-25 Recreational facilities for youth groups are popular at Silver Falls State Park. (O.S.H.D. Photo)

In addition, there are 12,000 surface acres of water and about 850 miles of rivers and streams, with a potential capacity to satisfy 21,295,000 recreation-days of water-related activities. Table II-19 shows the base water resource by subbasin.

Table II-19
Water resource base by subbasin, 1964
Middle Subarea

Subbasin	Lakes and Farm Ponds Less than 10 Acres		Reservoirs and Lakes Greater than 10 Acres		Major Rivers and Streams Miles	Water - Related Capacity Rec.-Days
	Number	Acres	Number	Acres		
Santiam	558	781	23	9,520	330	7,025,000
Coast Range	829	1,052	4	90	262	0
Pudding	803	760	1	20	140	1,644,000
Willamette River					111	12,626,000
Total	2,190	2,593	28	9,630	843	21,295,000

Developed Facilities

The Middle Subarea has 250 developed recreation sites containing 4,000 family units. By 1970, it is expected that 8,000 units will be available at these sites. Table II-20 lists camping and picnicking facilities in the Middle Subarea by subbasin.

Table II-20
Camp and picnic facilities by subbasin, 1963
Middle Subarea

<u>Subbasin</u>	<u>Number of Sites</u>	<u>Number of Family Units</u>			
		<u>Picnic</u>	<u>Tent</u>	<u>Trailer</u>	<u>Total</u>
Santiam	92	834	519	32	1,385
Coast Range	79	1,054	23	2	1,079
Pudding	<u>79</u>	<u>1,546</u>	<u>47</u>	<u>9</u>	<u>1,602</u>
Middle Subarea	250	3,434	589	43	4,066

Even though this subarea contains a good supply of basic outdoor-recreation resource, the development of facilities on this resource has not kept pace with the demand. Throughout the subarea, the existing facilities are inadequate to satisfy existing demand. The percentage of present demand which can be satisfied by the existing facilities is shown in Table II-21.

Table II-21
Demand satisfied by present facilities, 1963
Middle Subarea

<u>Subbasin</u>	<u>Demand</u>	<u>Facility Capacity</u>	<u>Demand Satisfied</u>
		(recreation-days)	(percent)
Santiam	2,207,000	1,854,000	84
Coast Range	2,729,000	1,665,000	61
Pudding	<u>2,630,000</u>	<u>2,446,000</u>	93
Middle Subarea	7,566,000	5,965,000 ^{1/}	79

^{1/} Capacity for water-related activities, 3,863,000 recreation-days.

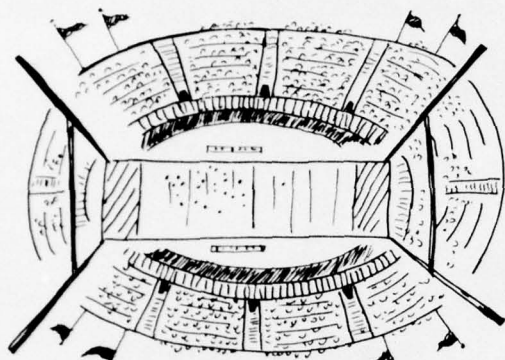


I am glad I shall never be young without wild country to be young in. Of what avail are forty freedoms without a blank spot on the map?

Aldo Leopold

LOWER SUBAREA

COLUMBIA



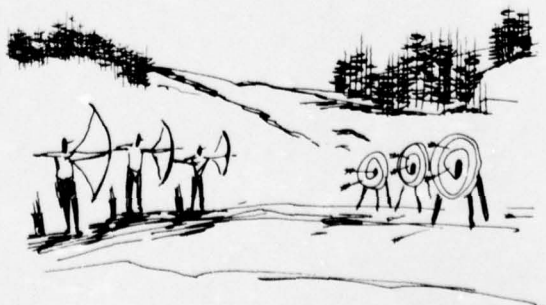
SANDY



TUALATIN



CLACKAMAS



LOWER SUBAREA

Population

The population of the Lower Subarea in 1960 was 721,650, an average density of 264 persons per square mile. Table II-22 shows population and density by subbasin.

Table II-22
*1960 population and density by subbasin
Lower Subarea*

<u>Subbasin</u>	<u>Square Miles</u>	<u>Population</u>	<u>Density Per Square Mile</u>
Tualatin	711	114,000	160
Clackamas	1,014	35,700	35
Columbia	431	562,250	1,305
Sandy	<u>582</u>	<u>9,700</u>	17
Lower Subarea	2,738	721,650	264

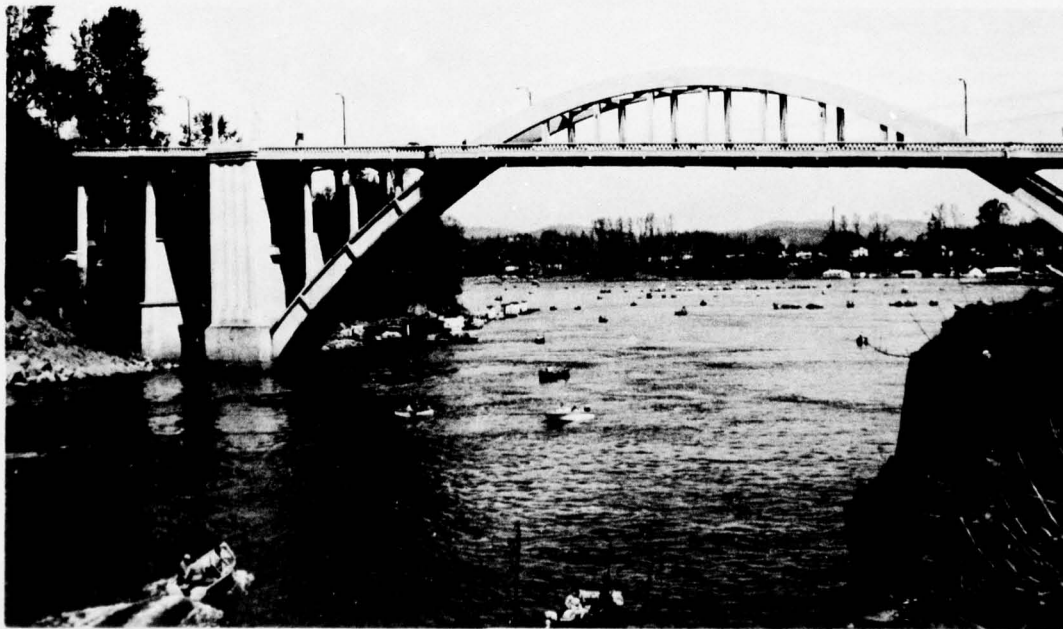


Photo II-26 *Recreationists must share the resource with other activities in the heavily populated Lower Subarea.
(O.F.C. Photo)*

Visitation

The subarea's recreation sites provided 10.8 million recreation days of use in 1963. Of this total, 1.7 million were to State areas, 2.35 million to national forests, 0.6 million to the Corps of Engineers sites (Bonneville Dam), and 6.15 million to city and county areas. Figures are not available for other public or private recreation areas. The Columbia and Sandy Subbasins, which contain only 37 percent of the land area in the Lower Subarea, accounted for 88 percent of the total recreation use.

Resource Capacity

Basic Resource

The Lower Subarea contains 784,766 acres of classified recreation land. Table II-23 lists this land resource base by administration and classification. These lands have a capacity to satisfy 14,818,000 recreation-days of nonwater-related activities.



*Photo II-27 Timothy Lake in the Clackamas Subbasin is one of several lakes easily accessible from the Portland area.
(O.S.H.D. Photo)*

Table II-23
Land resource base by administration
and BOR classification, 1963
Lower Subarea
(Acres)

	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>Total</u>
Private	-	-	187,300	-	-	-	187,300
Forest Service	166	7,687	498,756	20,959	2,320	-	529,888
BLM	-	1,101	41,499	-	-	-	42,600
State	757	760	14,106	523	-	2	16,148
City-County	<u>1,228</u>	<u>2,964</u>	<u>4,046</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>8,238</u>
Lower Subarea	2,151	12,512	745,707	21,482	2,320	2	784,174
Capacity (recreation-days)							14,818,000

In addition, there are 11,000 surface acres of water and nearly 500 miles of rivers and streams, with a potential capacity to satisfy 13,113,000 recreation-days of water-related activities. Table II-24 shows the water resource base by subbasin.

Table II-24
Water resource base by subbasin, 1964
Lower Subarea

<u>Subbasin</u>	<u>Lakes and Farm Ponds Less than 10 Acres</u>		<u>Reservoirs and Lakes Greater than 10 Acres</u>		<u>Major Rivers and Streams</u>	<u>Water - Related Capacity</u>
	<u>Number</u>	<u>Acres</u>	<u>Number</u>	<u>Acres</u>	<u>Miles</u>	<u>Rec.-Days</u>
Tualatin	289	269	0	0	151	0
Clackamas	447	523	9	2,050	148	1,023,000
Columbia	121	189	5	4,180	25	850,000
Sandy	67	136	10	3,920	116	2,320,000
Willamette River					<u>58</u>	<u>8,920,000</u>
Lower Subarea	924	1,117	24	10,150	498	13,113,000

Developed Facilities

A total of 329 recreation sites are available in the Lower Subarea. Most of these are located east of the Willamette River. At present, these sites contain about 5,200 family units; this total is programmed to expand to about 10,400 units by 1970. Table II-25 lists camping and picnicking facilities in the Lower Subarea by subbasin.

Table II-25
Camp and picnic facilities by subbasin, 1963
Lower Subarea

<u>Subbasin</u>	<u>Number of Sites</u>	<u>Number of Family Units</u>			
		<u>Picnic</u>	<u>Tent</u>	<u>Trailer</u>	<u>Total</u>
Tualatin	36	333	-	-	333
Clackamas	64	933	384	65	1,382
Columbia	155	2,284	-	-	2,284
Sandy	74	902	280	47	1,229
Lower Subarea	329	4,452	664	112	5,228

The capacity of recreation facilities within the overall subarea was adequate to handle the demand in 1963. However, because of the lack of attractive resource for future facility development, demand is expected to exceed facility capacity enormously by 1980. Lakes and reservoirs are lacking, particularly west of the Willamette River. Except for parts of the Columbia and Willamette Rivers near Portland, water-based recreation areas are very few. The percentage of present demand which can be satisfied with the existing facilities is shown in Table II-26.

Table II-26
Demand satisfied by present facilities, 1963
Lower Subarea

<u>Subbasin</u>	<u>Demand</u>	<u>Facility Capacity</u> (recreation-days)	<u>Demand Satisfied</u> (percent)
Tualatin	1,383,000	512,000	37
Clackamas	1,530,000	2,020,000	132
Columbia	3,222,000	3,995,000	124
Sandy	4,500,000	5,220,000	116
Lower Subarea	10,635,000	11,747,000 ^{1/}	110

^{1/} Capacity for water-related activities, 7,632,000 recreation-days.



Photo II-28 Multnomah Falls is a major attraction for travelers on the Columbia River Highway. (O.S.H.D. Photo)



*A River is more than an Amenity -- it is a treasure, it offers
a necessity of life that must be rationed wisely among those
who have power over it.*

Oliver Wendell Holmes

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PACIFIC NORTHWEST RIVER BASINS COMMISSION VANCOUVER WASH F/6 8/6
THE WILLAMETTE BASIN COMPREHENSIVE STUDY OF WATER AND RELATED L--ETC(U)
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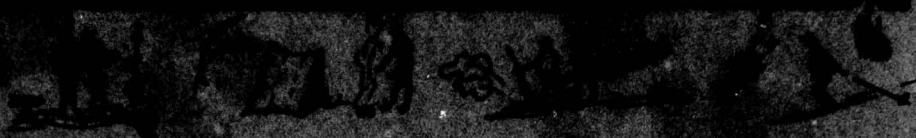
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It may be, that in the long run, over-
population in this country will threaten the
most important freedom we enjoy. . . the
freedom each person must have to maintain
his own integrity, to discover his natural
self and be true to it.

Herbert A. Ullall

FUTURE DEMAND



The Road for Tomorrow

For a nation that has been metropolitan and industrialized every
year, the movement of tomorrow, even the simple act of going,
has become complicated. It is imperative to make the portions of
the population that are still in the rural areas, a
nation of all people, and to make the movement of people
easier than any that we have ever known. We must not only
have the roads that connect us, but we must also have the
means to travel on them.



The objective of Part III is to identify the need for outdoor recreation development in Willamette Basin. This need exists whenever the demand for recreation is greater than the capacity of existing recreation facilities. In addition, there are also locational needs for facilities--needs which have come about because large groups of recreationists do not have ready access to existing recreation areas. The basic raw land and water resources, even if developed with facilities, will not be adequate to handle the projected demand.

The demand for outdoor recreation is expected to increase over fourfold between 1963 and 2020, based on the 20 principal activities shown under Definitions in Part I. The projected demands for 1980, 2000, and 2020 are based in part on population data in Appendix C - Economic Base.

The capacity of the recreation resource, its ability to satisfy recreation demand, is identified as (1) the potential of the basic land and water resource, and (2) the carrying capacity of developed facilities. In essence, (1) defines the ultimate capacity of the basin for recreation and (2) defines the present usable capacity.

Need, demand, and capacity of the resource are all expressed in recreation-days. The projected estimates of need provide the bases for the recommended programs in Part IV and for the recreation plan presented in Appendix M - Plan Formulation.

DEMAND FOR RECREATION

DEMAND VARIABLES

The demand for outdoor recreation opportunities, both now and in the future, is dependent upon a number of variables that are continually modifying our socio-economic structure. New developments can alter the demand for certain recreation activities. The four primary variables are (1) population change, (2) income, (3) mobility, and (4) leisure time. Secondary variables--age composition, sex ratio, educational level, health and place of residence--also influence recreation demand but to a lesser extent.

Population Change. Population changes are the main determinant of outdoor recreation demand. The full impact of the other three primary variables is dependent on the level of present and projected populations. The trend toward urbanization in the basin is expected to continue, thereby compounding the demand in and near the cities. About 74 percent of the population was urban and 26 percent rural in 1960. Ninety percent of the 1960 population was concentrated in four of the eleven subbasins.

Income. Variations in rates of participation attributable to income are particularly evident for activities such as boating, water skiing, and horseback riding, which usually require substantial outlays of money. Some of the differences among income groups are due to the interrelationship of income with other factors such as education, occupation, and age. It is assumed in this analysis that disposable income will increase in proportion to the rise in per capita income.

Participation in outdoor recreation activities shows a marked increase at an annual income of more than \$3,000. Participation increases steadily with income up to \$7,500-\$10,000 and declines slowly thereafter. In the Willamette Basin, the increase in average annual income will be close to the national projection, rising from \$2,357 in 1960 to \$8,700 in 2020. Per capita income for subbasins with a greater proportion of rural population is expected to remain below the national average, while continued higher levels are predicted for subbasins with largely urban populations.



*Photo III-1 As disposable income rises, more people are able to purchase high cost recreation equipment.
(U.S.B.O.R. Photo)*

Mobility. As income and leisure time increase the American public, already the most mobile people in the world, are expected to travel even more. It is estimated that the average person in the United States, at present, travels 5,000 miles per year and will travel at least 9,000 miles per year by 2020. This increase will result not only from improved highway systems but also from the development of more economical and rapid methods of transportation. This will bring those in the urban areas within easy reach of outdoor recreation not readily accessible today.

Leisure Time. The work week continues to decrease. The trend toward longer paid vacations and additional holidays will also continue. The ORRRC report indicates that at least one-fifth of all free time is used in outdoor recreation activities. It is estimated that the amount of leisure presently available to the average employed person will increase more than 30 percent by 2020.



Photo III-2 Trail bikes have become increasingly popular for outdoor recreation. (U.S.B.O.R. Photo)

Data for the State parks, National forests, and Corps of Engineers areas in the basin show that out-of-basin use constitutes 9.5 percent of the total use. With the continued improvement in transportation systems, the total out-of-basin use will continue to increase but at a rate slower than local use, so that out-of-basin use will decline to five percent by 2020. For estimates of non-resident recreation use, 9.5 percent is added to the demand generated by the resident population for 1960, 8.0 percent for 1980, 6.5 percent for 2000, and 5.0 percent for 2020.

PROJECTED DEMAND

The total participating population is that portion of the population residing within 125 miles of the basin boundary which likely would seek recreation opportunity in the study area. The Willamette Basin had a 1960 participating population of 748,000 compared to 1,168,000 resident population. This indicates that a substantial portion of the residents seek areas out of the Willamette Basin for recreation pursuits. On the other hand, some subbasins show larger participating populations than resident, meaning that the demand is greater than that generated by the resident population. Projected resident and participating populations are as follows:

<u>Year</u>	<u>Resident</u>	<u>Participating</u>
1960	1,168,000	748,000
1980	1,766,000	1,101,000
2000	2,417,000	1,490,000
2020	3,580,000	2,221,000

Per capita income has the greatest influence on the rate and types of activities. The participation rates developed in the ORRRC study for the western region are adjusted by a factor of 1.08 to better represent the Willamette Basin. Future demand is determined by applying these rates to the present demand.

It is assumed for the purposes of the demand projections that:

1. A substantial majority of the participating population originates from the three major population centers (Portland, Salem, and Eugene-Springfield).
2. Sixty percent of all recreational activity occurs in the day-use zone (within 40 miles of the population center).
3. Thirty percent of all recreational activity occurs in the weekend zone (40 to 125 miles from the population center).
4. The remaining ten percent of the recreational activity occurs as vacations or extended trips beyond the limits of the weekend-use zone (over 125 miles).
5. The demand generated by any subbasin population not within a population center seeks satisfaction within the associated subarea (Inflow and outflow are equal).
6. The ORRRC participation rates for persons 12 years and older apply to the total population because persons under 12 normally accompany older people.

Due to the influence of Vancouver, Washington and Interstate 80N through the Columbia River Gorge, the projected demand for Sandy Subbasin is adjusted accordingly.

The future demand for both water-related and nonwater-related activities is presented by subarea in Table III-1. It is assumed that 75 percent of the nonwater-related demand will be met by additions to urban recreation facilities, and this portion is outside the scope of this analysis. Therefore, Table III-1 reflects only the remaining 25 percent of the nonwater-related demand.

Table III-1
*Future demand for outdoor recreation, by subarea
 (in 1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related Activities</u>	<u>Nonwater-Related Activities</u>	<u>Total</u>
<u>Willamette Basin</u>			
1980	23,546	12,317	35,863
2000	36,655	18,992	55,647
2020	60,592	29,583	90,175
<u>Upper Subarea</u>			
1980	3,662	1,779	5,441
2000	6,018	2,949	8,967
2020	10,007	4,660	14,667
<u>Middle Subarea</u>			
1980	8,906	4,700	13,606
2000	13,811	7,255	21,066
2020	21,236	10,034	31,270
<u>Lower Subarea</u>			
1980	10,978	5,838	16,816
2000	16,826	8,788	25,614
2020	29,349	14,889	44,238

Table III-2
Projected number of pleasure craft, by subarea

<u>Subarea</u>	<u>1980</u>	<u>Year 2000</u>	<u>2020</u>
Lower	28,614	41,336	65,917
Middle	11,513	15,002	20,163
Upper	<u>10,054</u>	<u>14,144</u>	<u>20,835</u>
Totals	50,181	70,482	106,915

RECREATION RESOURCES

USE AND LOCATION

Since land use patterns have profound effects on recreation resource availability, the basin's total resource base ultimately limits its development capabilities for outdoor recreation. Willamette Basin contains abundant, high-quality resources suitable for a wide range of outdoor recreation activities. Sixty-two percent of the basin is forest land, 33 percent farmland, and five percent other uses. About 55 percent of the total land in the basin has outdoor recreation potential.

About 40 percent of the basin is in public ownership and 60 percent private. More than one-third of the basin is in Federal ownership, preponderantly national forests, with most of the remainder under jurisdiction of the Bureau of Land Management and the Corps of Engineers. The State of Oregon owns about two percent of the total basin land, mostly in the Middle and Lower Subareas. Less than one percent of the total land area is owned by the cities and counties.

Although the quantitative and qualitative aspects of the resource base are favorable to recreation, these resources are often not located in areas of greatest demand. The Middle and Upper Subareas have substantially more resource than the Lower Subarea. Major shortages are evident within a day-use zone of the three major population concentrations.



*Photo III-3 Almost 2 1/2 million acres of land and water in the Willamette Basin are in the national forests.
(U.S.F.S. Photo)*



*Photo III-4 An exhausted gravel pit when filled with water, became a popular city swimming pond.
(O.S.D.G. & M.I. Photo)*

ADMINISTRATION

Approximately 65 percent of the classified recreation land is administered by the Federal Government. Slightly more than three percent is administered by State Government. Only three-tenths of one percent is under county and municipal jurisdiction. The remainder is private.

Most of the Class III lands are under Federal jurisdiction and comprise, for the most part, lands that are managed for multiple use. Recreation usually is limited to the more extensive activities such as riding, hiking, rock hounding, and gathering forest products. These lands provide considerably less capacity per acre than the developed areas. Many Class III lands have potential as Class II or I land through development. The private lands have been providing some outdoor recreation opportunity, and they undoubtedly have a capacity for far greater use than they presently receive.

CAPACITY

The extent and quality of basic land and water areas determine the potential for recreation development; this potential is already partly developed. Existing developments, such as campground and picnic facilities, permit intensive use of the basic recreation resource. The capacities of both the basic resource and the existing facility developments are expressed in recreation-days in this appendix.

Basic Resource

The potential capacity of the basic resource to satisfy recreation demand is 94,293,000 recreation-days. This capacity is presented, by subarea, in Table III-3 for water- and nonwater-related activities.

Table III-3
Capacity of basic resource, by subarea, 1963
(1,000's of recreation-days)

<u>Subarea</u>	<u>Water-Related Activities</u>	<u>Nonwater-Related Activities</u>	<u>Total</u>
Upper	21,222	8,919	30,141
Middle	21,295	14,926	36,221
Lower	<u>13,113</u>	<u>14,818</u>	<u>27,931</u>
Willamette Basin	55,630	38,663	94,293



Photo III-5 *Gathering forest products is a popular use of Class III recreation land. (U.S.F.S. Photo)*

Developed Facilities

The capacity of existing (1963) outdoor recreation facilities is 21,818,000 recreation-days. Of this total, 14,263,000 are water-related and 7,555,000 are nonwater-related. The capacity of existing facilities by subarea is shown in Table III-4.

Table III-4
*Capacity of existing (1963) facilities, by subarea
(1,000's of recreation-days)*

<u>Subarea</u>	<u>Water-Related Activities</u>	<u>Nonwater-Related Activities</u>	<u>Total</u>
Upper	2,768	1,338	4,106
Middle	3,863	2,102	5,965
Lower	<u>7,632</u>	<u>4,115</u>	<u>11,747</u>
Willamette Basin	14,263	7,555	21,818

Nonwater-Related Activities

The capacity of the basic land resource for nonwater-related activities is about 38.7 million recreation-days. This was determined by using BOR capacity standards for land classification (Part II). The potential capacity of these lands cannot be readily ascertained, because development will change some lands from light- to heavy-use areas. However, the capacity constitutes a conservative estimate of the potential capacity of the basic land resource.

Water-Related Activities

The potential capacity of the basic water resource to sustain water-related activities is about 55.6 million recreation-days. The capacity standards, which include water surface and needed adjacent land area, are:

Slack water storage	500 rec.-days/acre annually
Major streams	1,000 rec.-days/mile annually
Minor streams	150 rec.-days/mile annually

For the Willamette River, the capacity standard is 400 recreation-days per acre of water surface and needed adjacent land rather than 1,000 recreation-days per mile. For this stream, it is assumed that the adjacent land area would be 10 percent developed to Class I BOR Standards and 90 percent Class II.

N E E D S

During the study period, additional recreation facilities should be developed throughout the basin, and additional basic water resources will be needed, particularly in the Lower Subarea and in the Middle Subarea west of Willamette River. As recreation demands increase and the basic resources are developed, the remaining potential of the basic resource will decline.

BASIC RESOURCES

In Table III-5, the future availability of basic resources is shown by subarea. Where surplus is shown, the basic resource will not be exhausted by the projected facility development. Where deficit is shown, additional basic resource will be needed or users will have to go to some other area. The figures shown in Table III-5 are the resource capacity (Table III-3) less the demand (Table III-1).

Table III-5
*Availability of basic resource, by subarea
(1,000's of recreation-days)*

Year	Water-Related Activities		Nonwater-Related Activities		Total	
	Surplus	Deficit	Surplus	Deficit	Surplus	Deficit
<u>Willamette Basin</u>						
1980	32,084		26,346		58,430	
2000	18,975		19,671		38,646	
2020		4,962	9,080		4,118	
<u>Upper Subarea</u>						
1980	17,560		7,140		24,700	
2000	15,204		5,970		21,174	
2020	11,215		4,259		15,474	
<u>Middle Subarea</u>						
1980	12,389		10,226		22,615	
2000	7,484		7,671		15,155	
2020	59		4,892		4,951	
<u>Lower Subarea</u>						
1980	2,135		8,980		11,115	
2000		3,713	6,030		2,317	
2020		16,236		71		16,307

Water-Related Activities

For the basin as a whole, the basic water resource is adequate to satisfy all projected demands until almost the end of the study period. However, a shortage is expected to develop in the Lower Subarea soon after 1980 and become acute after 2000. The Upper and Middle Subareas are expected to have sufficient basic resource throughout the study period, although the latter will nearly run out. By 2020, the surplus in the Upper and Middle Subareas will not be great enough to offset the deficit in the Lower Subarea, so that the Willamette Basin as a whole will show a deficit. It will be necessary to create additional water resource capacity (by constructing reservoirs, acquiring or opening areas for recreation, or intensifying per-acre use) or depend on non-basin recreation areas and facilities to satisfy part of the 2020 demand for water-related activities.

Nonwater-Related Activities

The basic land resource, at present capacity, is more than adequate to satisfy the projected demands for nonwater-related activities, considering the basin as a whole. Only the Lower Subarea is expected to exhaust its basic land resource capacity, but the deficit will be negligible and not occur until almost 2020. Land resource capacity can be increased by changing the BOR land classification through development of facilities for more intensive use.



Photo III-6 Many active climbing & hiking groups enjoy the natural beauty of the basin. (U.S.F.S. Photo)

DEVELOPED FACILITIES

As recreation demands increase, the need for additional facilities will increase progressively. In Table III-5, the incremental needs for facilities are shown for each planning period, by subarea; for example, the 1980 need is for the period between the present and 1980, the 2000 need is for 1981-2000, etc. The needs shown for 2000 and 2020 are based on the assumption that the needs during the previous planning period(s) have been met. In Table III-6, the 1980 needs are the 1980 demands (Table III-1) less the capacity of existing facilities (Table III-4); the 2000 and 2020 needs are the 2000 and 2020 demands less the 1980 and 2000 demands, respectively (Table III-1).

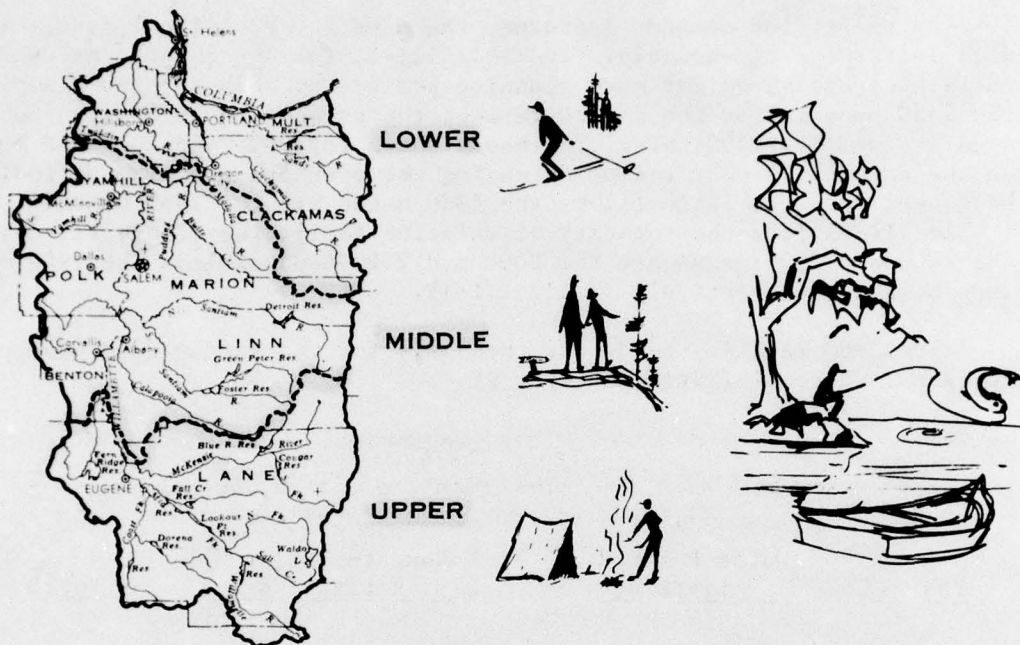
The 1980 facility needs are the basis for the recommended agency (program) responsibilities in Part IV.

Table III-6
*Incremental need for recreation facilities, by subarea
(1,000's of recreation-days)*

<u>Year 1/</u>	<u>Water-Related Activities</u>	<u>Nonwater-Related Activities</u>	<u>Total</u>
<u>Willamette Basin</u>			
1980	9,283	4,782	14,065
2000	13,109	6,675	19,784
2020	23,937	10,591	34,528
<u>Upper Subarea</u>			
1980	894	461	1,355
2000	2,356	1,170	3,526
2020	3,989	1,711	5,700
<u>Middle Subarea</u>			
1980	5,043	2,598	7,641
2000	4,905	2,555	7,460
2020	7,425	2,779	10,204
<u>Lower Subarea</u>			
1980	3,346	1,723	5,069
2000	5,848	2,950	8,798
2020	12,523	6,101	18,624

1/ Figures given are for planning period preceding the target year; 1980 represents the period from the present (1963) to 1980, 2000 represents 1981 to 2000, etc.

SUBAREA ANALYSES



UPPER SUBAREA

The basic resources, both land and water, are sufficient in the Upper Subarea to satisfy all existing and projected demand. There is also enough surplus to help satisfy needs in the Middle and Lower Subareas. The location of the various resources is ideal from the standpoint of access and population distribution, except in the Long Tom Subbasin where resources for hiking, skiing, and mountain climbing are lacking.

The capacity of existing facilities is nearly adequate to meet demands in this subarea through 1980. However, there are locational needs for some facilities. The developed facilities in the Coast Fork Subbasin can satisfy only 52 percent of the present demand, and those in the Long Tom Subbasin only 78 percent.

In the Upper Subarea, continued action is needed to develop facilities on the existing resource, particularly in the Coast Fork and Long Tom Subbasins. Potential of the Willamette River main stem should be realized through pollution control, facilities and access development, and land acquisition and easement. Proper planning and development of the Willamette River could further enhance the recreation resource in this subarea by dispersing the use, allowing for more types of activities and enhancing the user's recreation experience. Whatever is done in the Upper Subarea will affect the resources and people downstream. Therefore, continued planning and action will be needed in pollution abatement, stream and reservoir regulation, access, and private recreation development.

The Upper Subarea is of high environmental quality. This quality should be preserved through good land use planning prior to development. Construction of recreation facilities in the McKenzie and Middle Fork Subbasins should be of the less intensive type to complement the existing primitive environment.

Because of the abundant and diversified resources, many residents of the other subareas will use this area for their recreation pursuits. The Upper Subarea also attracts many visitors from outside the basin, and even out of the State.

MIDDLE SUBAREA

The Middle Subarea, even though well-endowed with outdoor recreation resources, does have significant needs in both kind and location of its resources. Some surplus capacity in the eastern portion of the subarea can help satisfy demand from the Lower Subarea.

West of the Willamette River, the subarea is lacking in both water-related and nonwater-related resources. Nonwater-related activities such as skiing and mountain climbing are quite limited, and the majority of these activities will have to take place in the eastern portion of this subarea or elsewhere. Water-related activities can be enhanced by constructing certain water-storage developments in the vicinity.



Photo III-7 Limited access to the Willamette now exists. Future recreation use depends on the development of public access and facilities. (O.S.H.D. Photo)

There is an immediate need for development of recreation facilities. In fact, the greatest need in the basin with respect to facility capacity is in the Middle Subarea; none of its three subbasins has sufficient facilities to satisfy existing demand. The Coast Range Subbasin can satisfy only 61 percent of its demand, and the Santiam and Pudding 84 and 93 percent, respectively.

Immediate action is needed to construct recreation facilities throughout this subarea. In the Coast Range Subbasin, facilities to handle another 3.5 million recreation-days must be developed if 1980 demand is to be met. Other needs include: proper and orderly development of the Willamette River to increase and disperse the recreation resource; development of water storage projects in the Coast Range and Pudding Subbasins to provide opportunities for water-related activities; pollution control; and streamflow regulation to insure adequate water quality and quantity for optimum outdoor recreation values.

Approximately one-half the land in the Middle Subarea is in private ownership. If the needs of this subarea and the entire basin are to be satisfied, an aggressive private outdoor recreation development program is necessary.

Ugliness is not an inevitable cost of modernity.

William O. Douglas



Photo III-8 Water pollution is a serious problem in the Lower Subarea. (Unknown)

LOWER SUBAREA

The Lower Subarea, with its population concentration and massive industrial complexes, has the greatest outdoor recreation need in Willamette Basin for basic resources. This subarea has the most serious pollution problems, the most unfavorable distribution of recreation resources, and the largest acreage of closed municipal supply watersheds. The total capacity of the resource is more fully developed here than in the other subareas. Lack of available resource supply in future years will force part of the demand in the Lower Subarea to other parts of the basin.

The Clackamas, Columbia, and Sandy Subbasins all have facility capacity exceeding present demand. However, the facility capacity in the Tualatin Subbasin can satisfy only 37 percent of the demand.

Immediate action is needed to construct facilities in the Tualatin Subbasin, and to purify and develop the Willamette and Columbia Rivers in and near the urban areas. Other action should include: water storage projects in the Columbia, Tualatin and Clackamas Subbasins; improved access to the available resources; facility development to better utilize and protect the existing resources; development of scenic drives and trails, particularly in the Tualatin and Columbia Subbasins, to satisfy more of the nonwater-related demand; and study the possibility of opening the Bull Run Watershed to recreation use. The program to control vandalism and misuse should be strengthened.

Since much of the suitable recreation land in the Lower Subarea is in private ownership, an aggressive program to encourage private recreation development is needed.



Photo III-9 Future development of nonwater-related recreation facilities should include scenic drives and bicycle and foot trails. (U.S.B.O.R. Photo)



Appreciation of landscape beauty comes late in man's progress from the primitive to the civilized state, just as it comes to an individual at a stage beyond early childhood. Once started in a person or society, this appreciation grows, and ultimately becomes identified with the innermost responses of a national consciousness or an individual soul.

Don Greame Kelley

The decision to undertake any project should rest on conclusions ascertained by investigation and judgment of experts and on its relation to great state systems and to the general plan, never on mere opinion.

Franklin Roosevelt

THE END OF MEANS
THE END OF MEANS



This section presents the ways and means by which the existing and future needs, outlined in Parts II and III, can be satisfied. Both the general considerations affecting all participating entities or agencies and the specific responsibilities in each subarea are presented.

The following general conclusions concerning outdoor recreation in the Willamette Basin can be drawn from the analyses in Parts I, II, and III, and the individual subbasin reports (See Addendum "A").

1. The Willamette Basin as a whole contains ample basic resource to satisfy outdoor recreation needs until almost 2020. However, the location of the resource is not optimal with respect to user location.
2. The shortage of basic outdoor recreation resource supply in the Lower Subarea, particularly in the Columbia Subbasin, will be acute by 2000.
3. Even though the basic resource as a whole is nearly adequate, the existing facility development is insufficient to meet even the immediate (1980) need. The most pressing need for facilities is in the Middle Subarea.
4. There are possibilities for creating new water-related resources by constructing storage projects. Changes in recreation land use classification through development of facilities can also increase the capacity for both water- and nonwater-related activities.
5. Low summer flows in streams and fluctuating reservoir pools have reduced the quality of the recreation experience and the capacity of certain areas.
6. The Willamette River is a major recreation resource in the basin, capable of satisfying nearly half the total water-related demand. At present, however, the river is generally undeveloped and, in some stretches, unsuitable for recreation because of pollution.



Photo IV-1 Adequate clearing of existing and future reservoirs, and stabilization of pool levels can enhance outdoor recreation. (U.S.B.O.R. Photo)

7. The quality and diversification of recreation experiences can be improved throughout the basin.
8. Although hunting is a major recreational use of the lands in the basin, it occurs mostly after the peak recreation-use season. Therefore, it does not significantly contribute to the period of heavy demand.
9. Because of the excellent road network and the mobility of the residents, most parts of the basin can be reached for weekend use.
10. Satisfaction of all recreation needs in the basin will require intensive cooperation and participation of all levels of government.

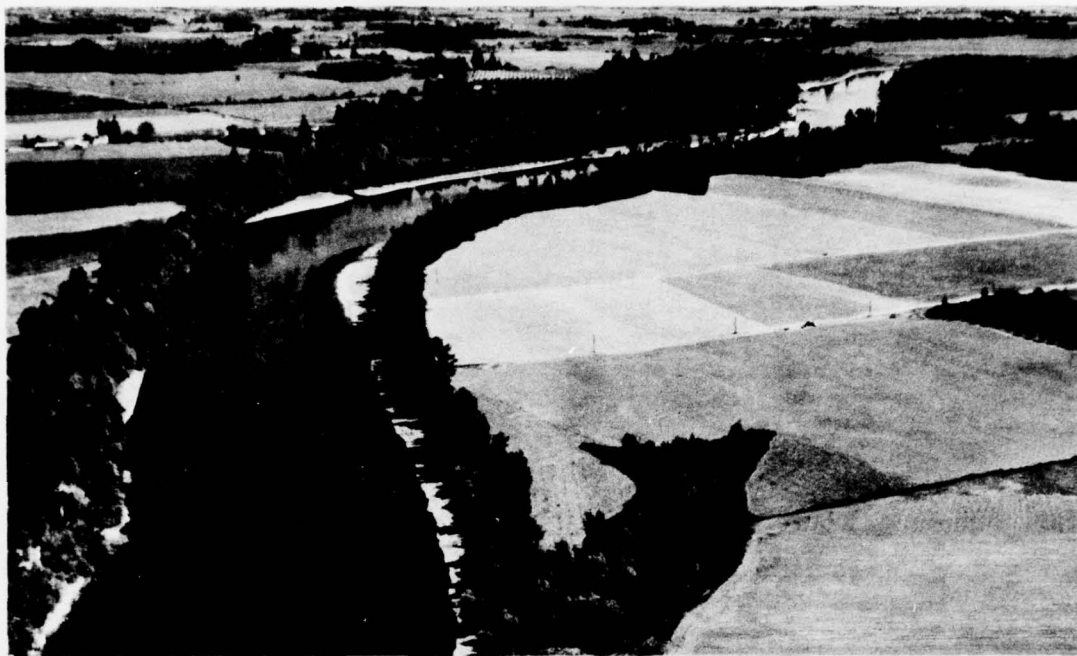
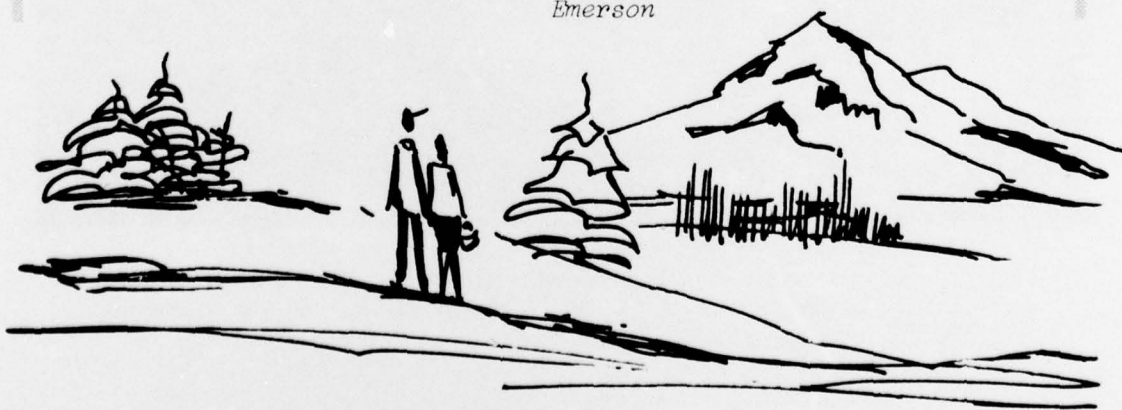


Photo IV-2 The Willamette River is a major recreation resource in the basin. (O.S.H.D. Photo)

11. Developing the recreation potential of private lands would play an important role in satisfying future demand. At present, however, little development has taken place except at private power-company reservoirs and on lands of some large timber companies. Some private farm ponds, waterfowl hunting areas, and youth camps have also been developed.

Beauty is its own excuse for being.

Emerson



GENERAL CONSIDERATIONS

The opportunities and alternatives available to satisfy the outdoor recreation needs are many. The following discussion deals with some of the basic, more general alternatives which can be used separately or in combination to help satisfy certain needs.

WATER STORAGE

Within Willamette Basin, there are approximately 85 potential water-storage projects which have been identified as having varying degrees of outdoor recreation benefits. In some, the primary benefit would be direct, providing recreation opportunity to use the reservoir water surface and adjacent land. In others, the benefits would be indirect by providing storage to maintain streamflows and pool levels in the reservoirs downstream.

New water-storage projects are a major alternative to meet recreation facility needs, especially in areas where basic water resource is lacking (i.e., in the Lower Subarea after 1980 or in other areas where existing unused water bodies are relatively inaccessible).



Photo IV-3 Water storage projects can create additional recreation resource supply. Locational needs can be satisfied as well. (U.S.F.S. Photo)

Maintenance of streamflows and free-flowing waters is important to provide variety and quality of recreation experiences. Only with a variety of resources suitable for different types of water-based recreation can full opportunity be achieved. Increased opportunities for stream fishing, floating, canoeing, and most other water-related activities can be provided by retaining natural flowing water and augmenting low seasonal flows. In many instances, this can be accomplished by upstream storage projects. Minimum flow requirements for outdoor recreation purposes on individual streams are listed in the subbasin reports in the Addendum.

PRIVATE DEVELOPMENT

With more than half the land base in the Willamette Basin in private ownership, an opportunity exists for satisfying a significant portion of the outdoor recreation needs through private development. This is particularly true in the western portion of the Middle and Lower Subareas where the potential for development on public land is very limited.

Private development on public and private lands is a reasonable alternative in areas (1) where public development is not possible, (2) when returns to private capital can be demonstrated, or (3) where the local area is benefited and public and private capital is more efficiently expended through public-private cooperation.

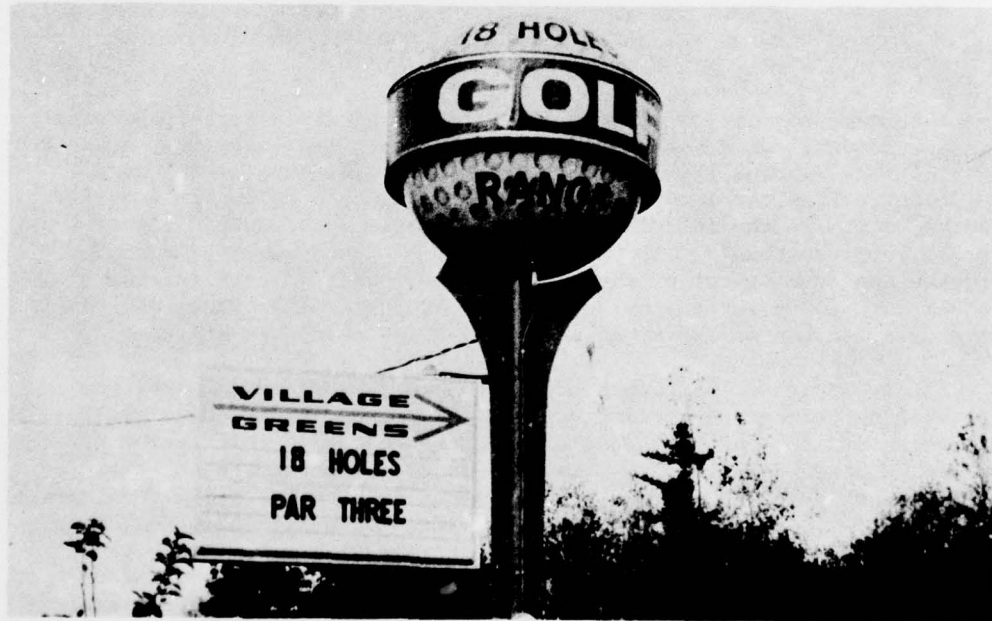


Photo IV-4 Encouraging investment and development with private funds will aid in stretching public monies. (U.S.B.O.R. Photo)



Photo IV-5 Private development of outdoor recreation facilities will become increasingly important in the future. This area was developed by Portland General Electric Company. (P.G.E. Photo)

Private recreation enterprise will become increasingly important in future years as development on public land nears capacity. At such a time, the returns from private investments will justify the expense of constructing the more intensive facilities such as campgrounds, trailer parks, etc. In the interim, leasing of hunting and fishing rights and other low-investment programs on private land can assist the overall recreation development of the basin. Development and utilization of small farm ponds would provide additional opportunity. Many possibilities exist close to the urban areas where the demand is greatest.

Large private landowners normally have greater opportunity for developing recreation facilities than small landowners. Even so, the large investment and high cost of maintenance and administration of sites, such as campgrounds, make them marginal at the present time for even these large landowners. Better possibilities for early development might be facilities not extensively provided by public agencies, such as group facilities to be reserved by trailer clubs, boy scout troops or church groups, and specialized areas for handicapped or retarded persons. Facilities of this type are easier and cheaper to administer, and they can be closed to prevent vandalism and misuse when not occupied. They would also take pressure off public areas as well as advance public relations for the private companies.

Another possibility for large private landowners is the development of "interpretive" facilities, such as nature trails, roadside signs, interpretive displays, and self-guided auto tours. If these are imaginatively done, the private company not only can assist in filling an outdoor recreation need, but can gain much in public relations. Interpretation can be used to explain the operation, policies, and management of the company, and thereby, promote public understanding.

Whenever possible, public recreation agencies should work with adjacent private landowners to develop a plan for providing a complete outdoor recreation package. A sound working relationship between public agencies and large landowners is quite feasible. Through mutual cooperation and agreement, the public body could provide interpretive facilities, nature trails, and other high-cost, low-income items, and the private owner could supply and manage the higher income backup facilities such as campgrounds and trailer parks. A plan of this type would eliminate so-called "competition" between public and private entities. Another advantage is the savings in taxpayers' dollars by encouraging private capital to provide "public" recreation sites. The problems of fee schedules, construction standards, and administrative procedures, under a public-private plan of this nature are complex, but not insurmountable. The long-range benefits received would be well worth the early pioneering efforts to establish a workable system of cooperation.



*Photo IV-6 Privately operated boat rental and moorage operations provide facilities for public recreational use.
(O.S.H.D. Photo)*

There are numerous private church and other group camps scattered throughout the basin. These camps provide recreation opportunities and facilities for their members, which in turn eases the pressure on public areas. Moreover, these private camps represent possible satisfaction of some public needs. Through mutual cooperation and coordination between the camp owners and the appropriate public agencies, a plan for broader usage of many of these camps could be accomplished.

Legislators and lawmakers should study the tax structures and liability laws on private lands in an effort to provide feasible methods of tax and liability relief which are necessary before full-scale public recreation on private lands can become a reality. A tax, based on existing use, is needed, (as opposed to highest and best use), to encourage maintaining lands in open space or low intensity use.

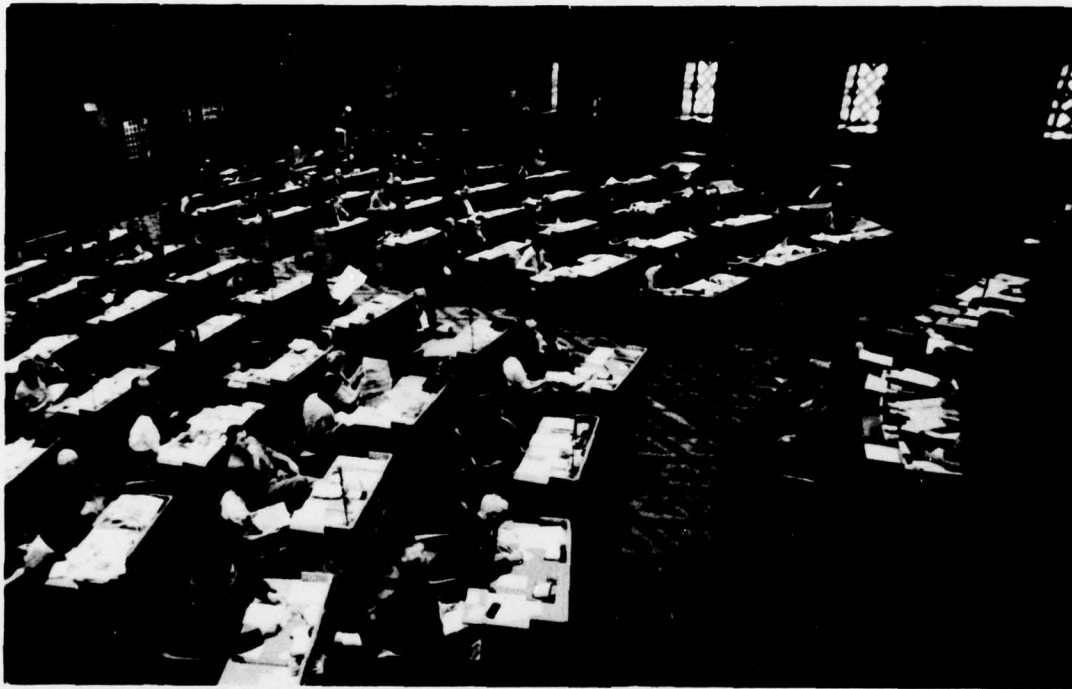


Photo IV-7 The legislators and lawmakers of Oregon authorize the tax funds and laws necessary for recreational development. (O.T.A. Photo)

RECLASSIFICATION OF LAND USE

Reclassification of suitable parcels of land is one means of increasing recreation capacity. Reclassification must be preceded by adequate planning to insure proper selection of areas on which to increase capacity standards and to make sure these sites can withstand the additional use without damaging the resource. For example, under the BOR system, a parcel of land may be reclassified from Class III to Class II by the addition of appropriate facilities.

Before reclassification of land can be a useful tool in the Willamette Basin, a thorough study of present classification is needed. There is evidence that some lands of like classifications may not in fact be of the same standard. This is a general problem attributed to different agencies and individuals undertaking the task of classifying varied parcels of land under a common system.

Care must be taken to avoid overcrowding which reduces the quality of the individual recreation experience. This is particularly important in certain dedicated areas which have been set aside for their environmental qualities. Plans for sites to be developed in the near future should consider the possibility of increased capacity standards at a later date. If it is determined that the site could accommodate the increased standard, it should be planned so that this change could be incorporated when necessary. Ultimate needs for sewage disposal, water and power supply, roads and trails, and administrative facilities should be reflected in original planning to avoid expensive replacement or rehabilitation later.

Recreation land and green space can be preserved by a sound system of flood plain management. The most important tool of flood plain management is zoning. Under Oregon law, both cities and counties have powers to impose reasonable controls over the type of development which can locate in defined flood hazard areas. Studies are being conducted to determine the extent of these hazard areas. State government also can do much to encourage local governments to institute flood plain management through education, technical assistance, and financial help.

Costs of implementing flood plain management programs should not be excessive. In general, most potential residential and commercial development could locate outside flood hazard areas at little additional cost.

Detailed studies have documented the fact that flood damages continue to rise year after year even as expenditures for flood control climb.

Committee on Water, National Academy of Sciences



Photo IV-8 Proper flood plain zoning can reduce monetary loss due to flooding and also make additional land available for recreation purposes. (U.S.C.E. Photo)

Under zoning regulations, flood plains often serve as valuable and inexpensive recreational sites. Developers can be encouraged to set aside permanent open space areas within the flood plain and cluster homes on higher ground, leaving lower areas as common open space. It is neither possible nor desirable to purchase all the land which should be retained as open space. By purchasing scenic easements and passing flood plain zoning ordinances, local officials can restrict undesirable development on private property. Even though this private property cannot be used by the public for recreation purposes, its open, natural character, adds to the recreational environment.

USE OF MUNICIPAL WATERSHEDS FOR RECREATION

Watersheds which supply municipal water and are closed or limited to public entry could supply additional outdoor recreation potential. In areas short of recreation opportunities, such as the Lower Subarea, even limited use of these watersheds would help satisfy existing and future needs.

Preliminary to any public use, these areas should be studied to determine type and capacity of use consistent with the purpose of the watershed. A plan could then be developed to establish facility type and location, user distribution, control of unauthorized activities, and other guidelines to minimize conflicts.



*Photo IV-9 Recreation sites are often deserted during mid-week.
(O.S.H.D. Photo)*

REDISTRIBUTION OF USE

In all three subareas, some recreation sites are underused. Greater use of these sites, through redistribution of use, not only would help alleviate overuse at other sites, but would also lower per visitor maintenance and development costs.

One tool for obtaining better distribution is promotion. Normally, the better known, heavily used areas will continue to draw visitors through word-of-mouth publicity without extensive promotion. Publicity campaigns can be aimed at getting greater use at lesser known but equally attractive sites. Maps, brochures, and other information disseminated by administering agencies, Chambers of Commerce, and similar groups provide the media for promoting these areas. The same principle can be used to increase use on trails, scenic drives, and interpretive sites.

The type and location of facilities can affect distribution of use. Specialized or higher-quality facilities can be located in less-used sites to encourage use. An example might be providing hot water, electrical hookups, and sewage disposal in an area to encourage trailer use and relieve pressure on a nearby heavily used site. Imaginative facility design and layout can achieve capacity use of an otherwise marginal recreation site.

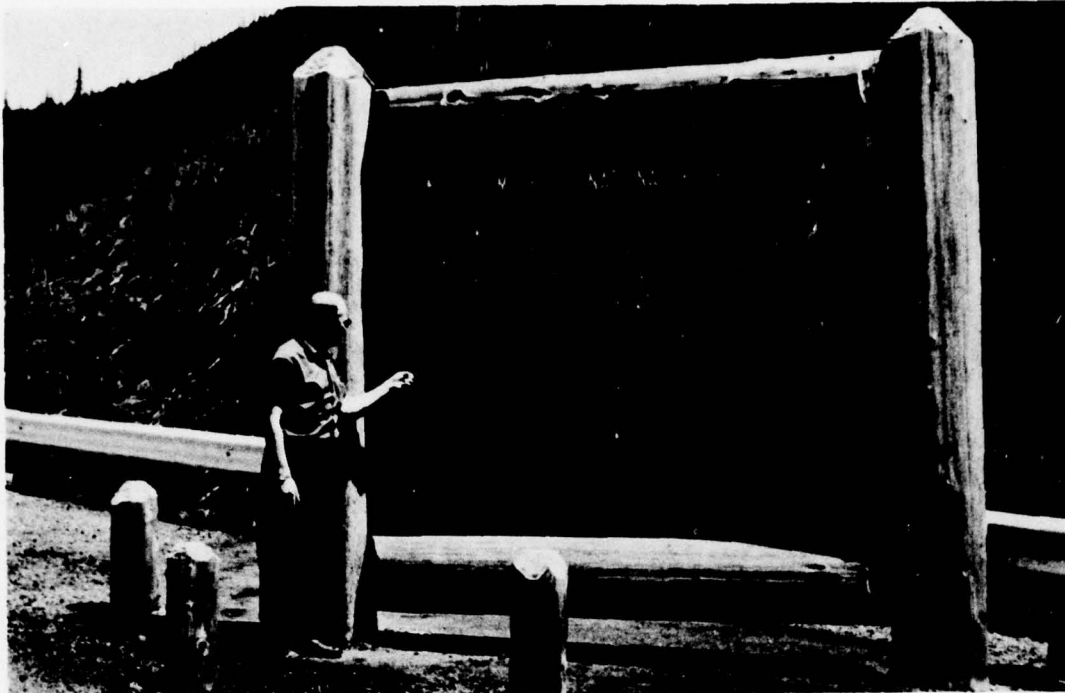


Photo IV-10 Good informational signs help disperse use and promote public relations. (U.S.B.O.R. Photo)

A third method to disperse use is through a well-planned access program. It is of little consequence that an area contains abundant outdoor recreation resources if there are no means for the user to get to these resources. A new road can often make available an entire new recreation opportunity. Improper access, on the other hand, can virtually destroy fragile areas. Access programs should not be concerned only with roads and trails. Other methods of transportation can often serve an area more inexpensively, more easily, and with less impact on the site. Examples include aerial trams or heliports to serve areas which would be considerably altered if reached by automobile. Elimination of automobiles and their space occupancy requirements can increase opportunity for recreation activity of many confined or fragile sites.

Development of high-quality scenic drives and trails with overlooks, turnouts, and interpretive signs can greatly increase the overall recreation supply. Six of the 15 most popular outdoor recreation activities take place on roads, trails, and walkways!

The vast majority of outdoor recreation sites in the basin receive the greatest use on weekends during the three or four months when the climate is favorable. This preference for weekends results largely from the present schedule of educational institutions and employment, and our traditional "weekend" concept.

Many innovations in recreation equipment are making climate less of a factor in recreation. There is also a distinct possibility of changes in schedules for schools and employment; and thus, a gradual reduction of weekend peaking. These changes will occur when the public is ready and willing to accept all of the ramifications involved. In the meantime, much can be done to encourage midweek and early and late-season visitation, thereby gaining optimum use of sites and facilities and reducing peak-use problems.

Methods for "lengthening" the recreation season include monetary incentive and publicity. In fee areas, rates can be lowered for mid-week and other low-use periods. Other monetary incentives might be lower rates for rental equipment, more and better services at lower cost, higher class accommodations, and so forth. An essential factor in obtaining off-season or midweek use is publicity. Advantages, such as lower rates, better selection, less crowding, and so forth, should be publicized. Special programs, babysitting services, and other incentives should be considered.

Land management agencies can keep certain sites open and maintained longer to encourage early and late-season visitors. Many people are discouraged from using recreation areas because facilities and services are closed or drastically reduced, campfire programs curtailed, and interpretive facilities locked up at the end of the traditional heavy-use season.



Photo IV-11 Cross-country skiing can be enjoyed in terrain unsuitable for downhill skiing. (U.S.F.S. Photo)

SUBSTITUTION OF USES

Obviously, not all forms of recreation activities can be undertaken in Willamette Basin. Pursuits such as surfing, spear fishing, and salt water fishing are either nonexistent or insignificant. The absence of these activities results from a lack of resources and facilities to support them. This does not imply that people in the basin participate in outdoor recreation less, but merely that they substitute other activities.

Substitution of uses, if properly done, can help satisfy the needs of an area. Imagination in developing new or different activities will help reduce congestion and overuse of resources. An example is the promotion of cross-country skiing as opposed to downhill skiing. This form of skiing can often take place in areas not suitable for downhill development and also provides an opportunity for low-income persons to enjoy the sport of skiing without the high cost of downhill equipment and lift tickets.

If land-managing agencies keep abreast of innovations in outdoor recreation equipment, such as snowmobiles and trail bikes, and provide appropriate facilities and trails, it is possible to utilize areas not suitable for other uses. Too often, however, the sudden pressure from these new interests causes even greater congestion on existing facilities because specialized facilities are lacking. Foresight and proper planning can turn these potential problems into administrative advantages.



Photo IV-12 Land managing agencies must keep abreast of new innovations in outdoor recreation equipment in order to provide appropriate facilities. (U.S.B.O.R. Photo)



*Photo IV-13 Playgrounds satisfy many recreation needs within the city.
(City of Portland Photo)*

The substitution-of-use method is particularly apropos in cities and urban areas. The development of scenic drives, bicycle trails, riding and walking paths, scenic and interpretive water routes, municipal and industrial interpretive tours, nature walks, and high-production fishing areas in conjunction with the more common urban facilities, such as playgrounds and golf courses, can satisfy many recreation needs within the city limits. People would be encouraged to change their recreation activity habits if suitable alternative activities were available. This would not only help reduce the mass exodus from the city and the congestion of outlying recreation sites, but if incorporated with mass-transit plans, could help to reduce in-city traffic congestion as well.

EXPORTING USE

At certain times and in certain areas, use may become so heavy that demands cannot be met and damage to the resource occurs. In these instances, it might be advisable to "export" use to other areas. The alternate areas could be within the basin or even completely outside. Promotion of other areas and good access development would help accomplish the exportation of use.

Long-range highway plans and transportation systems should be carefully studied and correlated with recreation planning. Since the Lower Subarea has a shortage of supply, it may be desirable in the future to develop high-quality access and promote even greater use of the Coastal area and the adjoining Washington State resources.

LAND ACQUISITION AND EASEMENTS

Numerous private holdings (potential recreation sites, prime access points, and other critical parcels of land in private ownership), if protected and developed for public use through acquisition or easement, could add significantly to the recreation resource, particularly in terms of quality. With the large acreage of public land in the basin and the probability of increased recreation development on private land, a program of land and easement acquisition should not be undertaken merely to add quantity to the recreation supply. The program should be designed to add prime, high-quality areas which are necessary for a well-balanced recreation plan.

The immediate and most difficult task is establishment of a long-range easement and acquisition program. The increasing demands on land for other uses and the escalation of land costs point out the need for immediate action. The State and local governments must take the initiative to acquire the land and water that will be needed for future recreation purposes. If available financing is a serious problem, perhaps some "option to buy" arrangements could be worked out for future acquisition.



Photo IV-14 Potential recreation land and open space is continually being converted to commercial development. (U.S.B.O.R. Photo)



Photo IV-15 Presently being implemented is a plan to establish a series of parks along the Willamette River from Eugene to Portland. (O.S.H.D. Photo)

How Much for Their Signature?

Is it profitable for the individual to build a beautiful home? To give his children a higher education? No, it is seldom profitable, yet we do both. These are, in fact, ethical and aesthetic premises which underlie the economic system. Once accepted, economic forces tend to align the smaller details of social organization into harmony with them.

No such ethical premise yet exists for the condition of the land these children must live in. Our children are our signature to the roster of history; our land is merely the place our money was made. There is as yet no social stigma in the possession of a gullied farm, a wrecked forest, or a polluted stream, provided the dividends suffice to send the youngsters to college. Whatever ails the land, the government will fix it.

I think we have here the root of the problem. What conservation education must build is an ethical underpinning for land economics and a universal curiosity to understand the land mechanism. Conservation may then follow.

Aldo Leopold, in Round River (Oxford, 1953)

P R O P O S E D A G E N C Y R E S P O N S I B I L I T Y

The basin has no overall quantitative need until 2020. However, locational and development needs presently exist in all three subareas.

In terms of the 1980 need for facility development, the Middle Subarea is most critical, followed by the Lower Subarea. To assist the following discussion of proposed agency responsibility, a summary of the needs for facility development to meet the 1980 demand is shown in Table IV-1. The figures shown are the difference between the capacity of existing (1963) facilities and the 1980 demand and include both water- and nonwater-related activities.

Table IV-1
*Facility needs to meet 1980 demands, by subbasin
(1,000's of recreation-days)*

<u>Upper Subarea</u>		<u>Middle Subarea</u>		<u>Lower Subarea</u>	
Coast Fork	839	Santiam	2,296	Tualatin	2,287
Middle Fork	169	Coast Range	3,463	Clackamas	508
McKenzie	+606 (surplus)	Pudding	1,882	Columbia	1,494
Long Tom	953			Sandy	780
Totals	1,355		7,641		5,069

Total Willamette Basin: 14,065

Satisfying existing and future development needs will require a coordinated effort with each participating entity contributing according to its capabilities. In arriving at the suggested responsibilities, it is necessary to categorize the need into three broad classes, as defined below:

High Density - Intensively developed lands, usually small in size, usually very close to population concentrations, and usually city or county-administered.

General Recreation - Moderately developed land, medium size, easy access to population centers. Usually on Class II and IV lands, and usually under State or Federal administration.

Natural Environment - More remote, extensive areas with minimum developments. Usually Class III and V land and usually Federally administered.



Photo IV-16 Most 'high density' areas such as Orchard Point Park on Fern Ridge Reservoir are administered by a city or county (U.S.C.E. Photo)

In Table IV-2, the total need is shown by subarea, with the responsibilities of the various entities outlined. The need shown as uncommitted includes driving and walking for pleasure which cannot realistically be assigned quantitatively to particular agencies. The levels of responsibility shown are not hard, fast rules, but only a suggested program for satisfying the anticipated need. However, they should be carefully considered in each agency program and any variances reconciled through agency coordination. To help satisfy the forthcoming recreation needs, the participating entities should use the major alternatives outlined in the previous section, either singly or in combination.

Table IV-2
*Summary of proposed agency responsibility to
 satisfy 1980 need, by subarea
 (Recreation-Days 1,000's)*

	Subarea			Basin Total
	Upper	Middle	Lower	
Local	194	1,076	794	2,064
County	266	476	594	1,336
State	93	1,129	751	1,973
Private	50	449	250	749
Forest Service	196	985	840	2,021
Bureau of Land Management	116	580	280	976
Corps of Engineers	173	894	-	1,067
Soil Conservation Service	-	308	235	543
Fish and Wildlife	-	50	15	65
Bureau of Reclamation	-	187	311	498
Uncommitted	267	1,507	999	2,773
	1,355	7,641	5,069	14,065



Photo IV-17 Most of the State Parks in the Willamette Basin offer
 'general recreation' opportunities. (O.S.H.D. Photo)



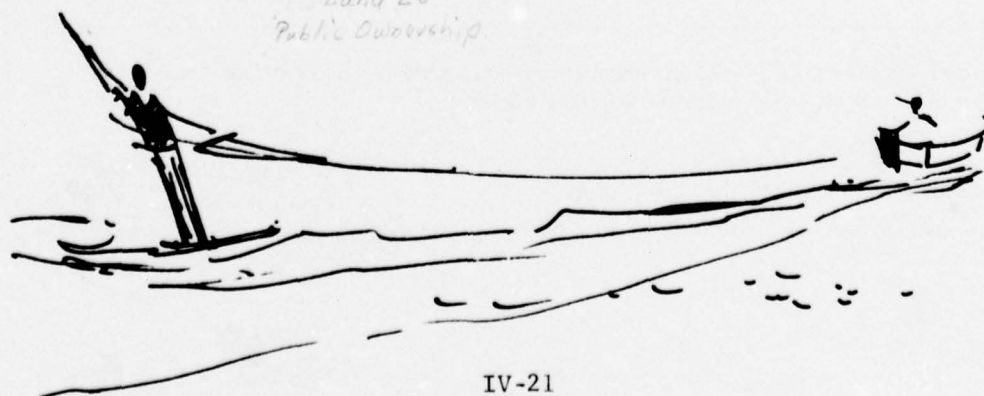
Photo IV-18 Federal land provides much of the 'natural environment' recreation in the basin. (O.S.H.D. Photo)

UPPER SUBAREA

Facilities are needed to accommodate an additional 1,355,000 recreation-days of use by 1980.

The high-density needs can best be satisfied by city, county, and Corps of Engineers projects. What is not provided by new or expanded developments on existing Corps reservoirs could be met by county development on the Willamette River.

The Corps of Engineers reservoirs can also meet a considerable portion of the general recreation need. Additional need can be satisfied by county and State developments, about half of which should be on the Willamette.



Federal agencies, such as the Forest Service and Bureau of Land Management, can provide most of the natural environment recreation on the vast public land holdings in this subarea.

Table IV-3 summarizes the suggested agency responsibility for this subarea.

Table IV-3
*Proposed agency responsibility to satisfy 1980 need,
Upper Subarea
(Recreation-Days 1,000's)*

Immediate Need (1980) = 1,355 Recreation Days

High Density (424)

Local - 194 ^{1/}	=	194
County - 173 (115 on Willamette)	=	173
Corps of Engineers - 57	=	<u>57</u>

Subtotal 424

General Recreation (413)

County - 93 (47 on Willamette)	=	93
State - 93 (47 on Willamette)	=	93
Corps of Engineers - 103	=	103
Forest Service - 83	=	83
Bureau of Land Management - 41	=	<u>41</u>

Subtotal 413

Natural Environment (518)

Forest Service - 113	=	113
Bureau of Land Management - 75	=	75
Corps of Engineers - 13	=	13
Private - 50 (20 on Willamette)	=	<u>50</u>

Subtotal 251

Uncommitted ^{2/} 267

Total 1,355

^{1/} Local will supply all nonwater-related except driving and walking for pleasure. No water-related here.

^{2/} Uncommitted is driving and walking for pleasure which cannot be assigned to specific agencies.



Photo IV-19 Corps of Engineers reservoirs can help meet future recreation demand. Baker Bay Park on Dorena reservoir. (U.S.C.E. Photo)

MIDDLE SUBAREA

Facilities are needed to accommodate an additional 7,641,000 recreation-days of use by 1980.

Supplying more high-density recreation areas which provide water activity facilities will be the most critical problem in the Middle Subarea. Normally, the counties and cities are responsible for the main portion of intensive-use recreation close to population centers. However, less than one percent of the Middle Subarea land and nine percent of the total existing facility capacity exists at local agency recreation areas. The cost of land acquisition may prohibit the local agencies from either acquiring or developing recreation facilities at a rate sufficient to meet more than a small portion of the needs in the close-to-population zone. Opportunities will develop at the Federal level for the Corps of Engineers, Bureau of Reclamation, and Soil Conservation Service to provide for some of these intensive-use needs at reservoirs near the population centers. The counties, cities, the State, and private groups can increase their emphasis on the other opportunities for intensive-use, water-oriented recreation in the lower valley, particularly along major streams and the Willamette River.

*Additional
Public
land?*



Photo IV-20 The Willamette River, if properly developed, could satisfy a significant portion of the water-related recreation demand in the basin. (O.S.H.D. Photo)

The Willamette River should be developed by State, county, and private entities to satisfy about one-fourth of the general recreation need. Federal agencies can provide the remaining development for this type of use.

Most of the natural environment need can be supplied by the Federal agencies, with the Forest Service taking the lead. Because of the shortage of well dispersed public land, there is a good opportunity for private recreation development in this subarea.

Table IV-4 summarizes the suggested agency responsibility for the Middle Subarea.

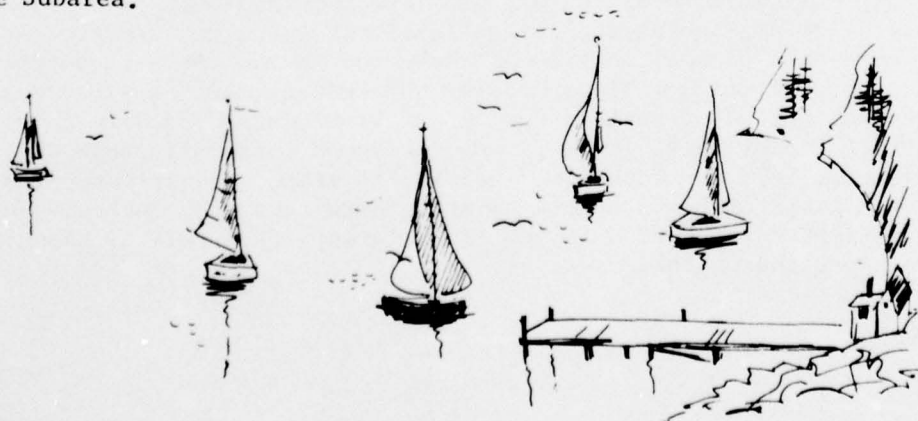


Table IV-4
Proposed agency responsibility to satisfy 1980 need,
Middle Subarea
(Recreation-Days 1,000's)

Immediate Need (1980) = 7,641 Recreation-Days

High Density (2,392)

Local - 1,076 <u>1/</u>	= 1,076
County - 359 (215 on Willamette)	= 359
State - 359 (215 on Willamette)	= 359
Private - 120 (20 on Willamette)	= 120
Corps of Engineers - 358	= 358
Soil Conservation Service - 120	= <u>120</u>

Subtotal 2,392

General Recreation (2,330)

State - 699 (419 on Willamette)	= 699
County - 117 (117 on Willamette)	= 117
Private - 117 (30 on Willamette)	= 117
Bureau of Land Management - 307	= 307
Forest Service - 350	= 350
Corps of Engineers - 466	= 466
Bureau of Reclamation - 117	= 117
Soil Conservation Service - 117	= 117
Fish and Wildlife - 40	= <u>40</u>

Subtotal 2,330

Natural Environment (2,919)

Forest Service - 635	= 635
Bureau of Land Management - 273	= 273
Soil Conservation Service - 71	= 71
Corps of Engineers - 70	= 70
Bureau of Reclamation - 70	= 70
Private - 212 (42 on Willamette)	= 212
State - 71	= 71
Fish and Wildlife Service - 10	= <u>10</u>

Subtotal 1,412

Uncommitted 2/ 1,507

Total 7,641

1/ Local will supply all nonwater-related except driving and walking for pleasure. No water-related here.

2/ Uncommitted is driving and walking for pleasure which cannot be assigned to specific agencies.

LOWER SUBAREA

Facilities are needed to accommodate an additional 5,069,000 recreation-days of use by 1980.

Most high-density recreation should be met by local, county, and State facilities. Some high-density facilities can be provided by the Bureau of Reclamation and Soil Conservation Service, and at privately-constructed reservoirs.

A large portion of general recreation need can best be met by State and county facilities, many of which will be on the Willamette River. Construction of multi-purpose Federal and private reservoirs (most likely in the Tualatin Subbasin) should supply about one-third of the general recreation need.

Most of the natural environment need should be met by the Forest Service.

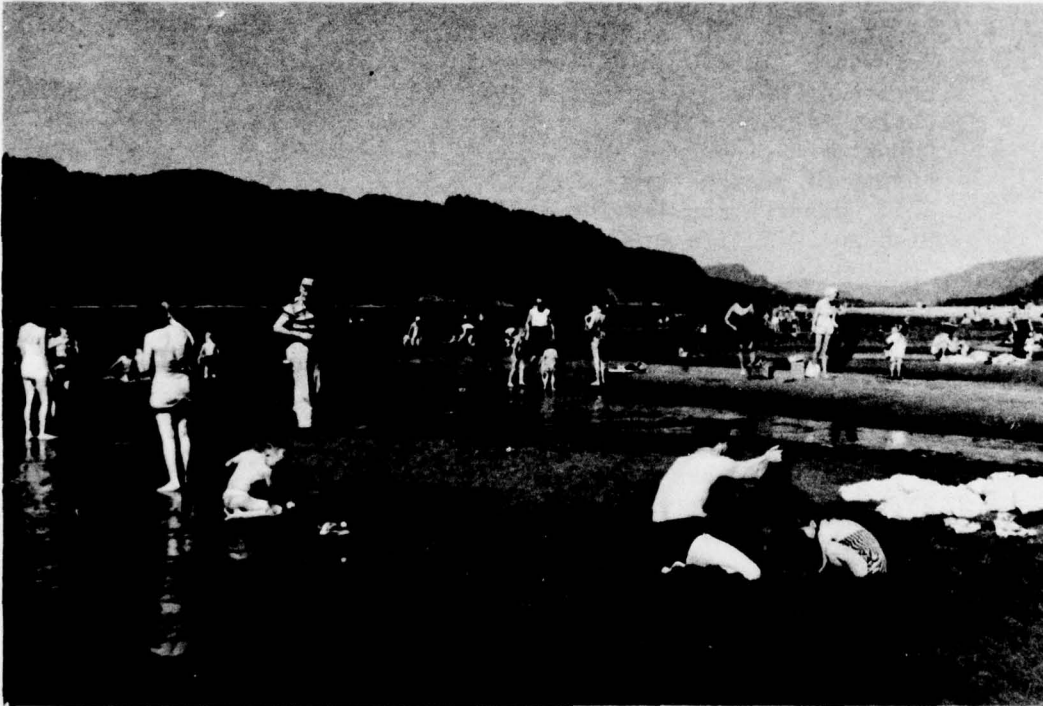


Photo IV-21 The State of Oregon should satisfy much of the general recreation need in the Lower Subarea. Rooster Rock State Park. (O.S.H.D. Photo)

Table IV-5 summarizes the suggested agency responsibility for the Lower Subarea.

Table IV-5
*Proposed agency responsibility to satisfy 1980 need,
 Lower Subarea
 (Recreation-Days 1,000's)*

Immediate Need (1980) = 5,069 Recreation-Days

High Density (1,587)

Local - 794 (70 on Willamette) ^{1/}	=	794
County - 238 (95 on Willamette)	=	238
State - 317 (174 on Willamette)	=	317
Private - 79 (47 on Willamette)	=	79
Bureau of Reclamation - 79	=	79
Soil Conservation Service - 80	=	80

Subtotal 1,587

General Recreation (1,547)

Bureau of Land Management - 140	=	140
Forest Service - 232	=	232
State - 387 (232 on Willamette)	=	387
County - 309 (124 on Willamette)	=	309
Private - 77 (46 on Willamette)	=	77
Bureau of Reclamation - 232	=	232
Soil Conservation Service - 155	=	155
Fish and Wildlife - 15 (15 on Willamette)	=	15

Subtotal 1,547

Natural Environment (1,935)

State - 47 (10 on Willamette)	=	47
County - 47 (10 on Willamette)	=	47
Private - 94 (20 on Willamette)	=	94
Forest Service - 608	=	608
Bureau of Land Management - 140	=	140

Subtotal 936

Uncommitted ^{2/} 999

Total 5,069

^{1/} Local will supply all nonwater-related except driving and walking for pleasure. Additional water-related demand amounts to 70,000 recreation days.

^{2/} Uncommitted is driving and walking for pleasure which cannot be assigned to specific agencies.



Holograph

I have congenital hunting fever and three sons. As little tots, they spent their time playing with my decoys and scouring vacant lots with wooden guns. I hope to leave them good health, an education, and possibly even a competence. But what are they going to do with these things if there are no more deer in the hills, and no more quail in the coverts? No more snipe whistling in the meadow, no more piping of widgeons and chattering of teal as darkness covers the marshes; no more whistling of swift wings when the morning star pales in the east? And when the dawnwind stirs through the ancient cottonwoods, and the gray light steals down from the hills over the old river sliding softly past its wide brown sandbars--what if there be no more goose music?

Aldo Leopold, in Round River (Oxford, 1953)

*Solving the dilemma between man's needs
and his wants is no simple task, but it is
one we, as a people, will continue to attempt
to resolve as we face each new day.*

Congressman Wayne N. Aspinall

CONCLUSIONS

SUMMARY AND RECOMMENDATIONS



Let us proclaim a creed to preserve our natural heritage with rights and duties to respect those rights:

The right to clean water--and the duty not to pollute it.

The right to clean air--and the duty not to befoul it.

The right to surroundings reasonably free from man-made ugliness--and the duty not to blight.

The right to easy access to places of beauty and tranquility where every family can find recreation and refreshment--and the duty to preserve such places clean and unspoiled.

The right to enjoy plants and animals in their natural habitats--and the duty not to eliminate them from the face of this earth.

*President Lyndon B. Johnson
Message to the Congress
February 25, 1966*



S U M M A R Y

Willamette Basin, with only one-fifth of Oregon's land area, contains two-thirds of its people. However, it is much more than a densely populated industrial and agricultural center; it is a storehouse of outdoor recreation opportunity. The recreation asset of the basin lies in the contrasts found within its boundaries. Topography ranges from flat, rolling terrain, just a few feet above sea level, to precipitous alpine crags over 10,000 feet in elevation. Climate varies from warm and moist on the valley floor to subarctic and arctic in the higher elevations of the Cascade Range. Plant and animal life vary to the same extremes.

Even with the inherent appeal generated by its physical and topographical features, Willamette Basin could not be the recreation attraction that it is were it not for the excellent road network throughout. A motorist can travel from one end of the basin to the other, a distance of over 150 miles, in about 2-1/2 hours. Secondary highways and side roads provide access to most of the basin. → next page

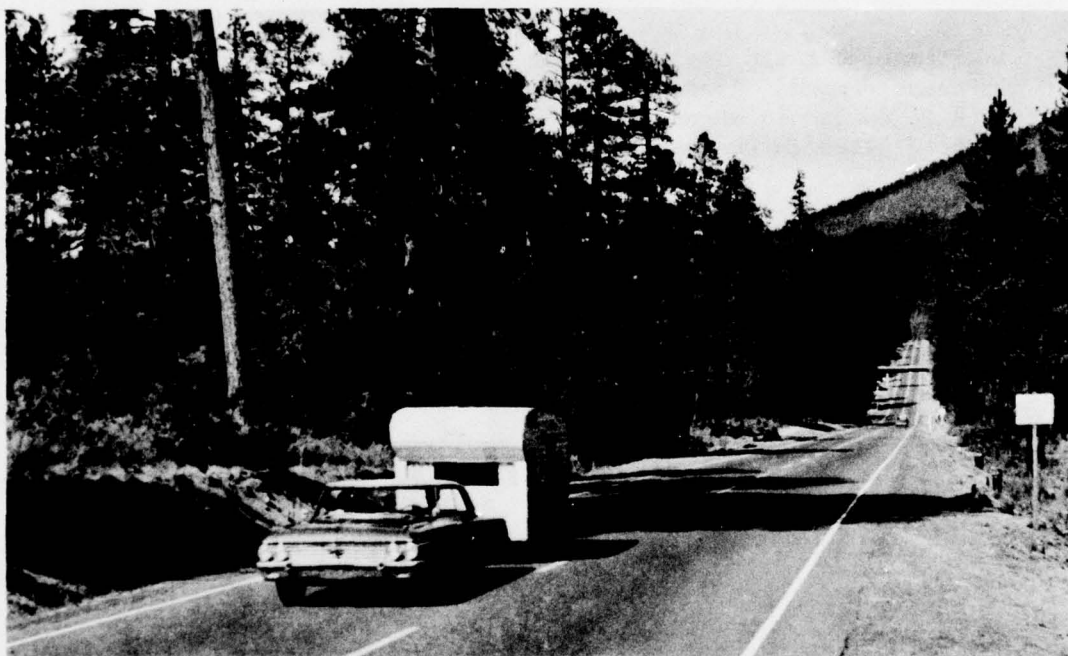


Photo V-1 The excellent road network and the mobility of the residents make all parts of the Basin available within the weekend zone. (O.S.H.D. Photo)

W-2
Outdoor recreation is an important use today. About 370,000 acres of land are specifically reserved as Recreation Areas, Unique and Natural Areas, and Wilderness. About \$270 million was spent on outdoor recreation and tourism within the basin in 1965, and outdoor recreation enthusiasts spent 20 million days pursuing their recreation interests. By 2000, the population within Willamette Basin will double, and the recreation use will increase almost fivefold. Day use is increasing at a faster rate than overnight use and water-related use is growing much faster than nonwater-related use.

Even with this demand for outdoor recreation, the overall supply of raw recreation land and water in the basin is adequate. There are 580 lakes and reservoirs with 53,000 surface acres, about 4,800 miles of rivers and streams of recreational importance, more than two million acres of public forest land, and nearly 1-1/2 million acres of private forest land within Willamette Basin. The single most important resource in the basin is Willamette River. It has the capacity, if properly developed and if pollution control measures are taken, to meet half of all the water-related recreation demand through 2020. It is possible to increase water surface area by development of potential multi-purpose water projects and construction of additional private farm ponds.

Willamette Basin has sufficient recreational facilities to meet the present demand. However, they are not optimally distributed with respect to demand location. There are more than 835 camping and picnicking sites in the basin.



Photo V-2 The construction of farm ponds should be encouraged to provide outdoor recreation opportunities.
(U.S.S.C.S. Photo)

Planning to meet the recreation demand is not without problems. The ideal resources for outdoor recreation often are not located near the population centers. There are conflicts in land and water use between industry and recreation, agriculture and recreation, and others. There is competition for land and water between different types of recreation use. Pollution is a serious problem, particularly in the lower basin. Some watersheds are closed to public recreation use. Adequate financing has not been available to develop the needed recreation facilities, even though the natural resource is at hand. Vandalism, misuse, and overcrowding are perplexing and costly problems. Except for power utility projects and some large timber companies, investment in private outdoor recreation enterprises have been very limited.

There is an increasing awareness of the needs for outdoor recreation in the basin. Many organizations and governmental agencies are planning or have initiated action programs to increase outdoor recreation opportunities. The focal point of State, county, and municipal effort has been along Willamette River. Federal recreation development, for the most part, has been on the tributary streams.

Planning for optimum development, and management of the water and related land resources within Willamette Basin are essential to meet the needs of a dynamic, mobile, recreation-seeking population.



Photo V-3 Conveniently located rest areas along the basin highways aid and encourage its mobile recreation-seeking population. (O.S.H.D. Photo)

RECOMMENDATIONS



In considering the basin's needs for outdoor recreation opportunities and the extent to which these needs may be met, it is recommended that:

Planning, acquisition, and development programs to provide outdoor recreation opportunities reflect the schedule of agency responsibilities outlined in Part IV. These agencies should incorporate into their administrative procedures and budgets the effort needed to meet these needs.

Further emphasis be given to the development of Willamette River for recreation. All agencies should support the State-Federal program now underway on the Willamette to provide a series of parks, greenspace, and access points.

Highest priority be given to water storage projects in the portion of the basin west of Willamette River.

Scenic trails, roads, and parkways be planned and constructed as an integral part of water resource development.

County and municipal governmental agencies, which are the key to satisfaction of high-density needs, be encouraged and assisted in carrying out their responsibilities.

The private recreation and tourism industry be encouraged to expand profitable enterprises and opportunities. Government policies should be reviewed where needed to create a favorable atmosphere for private investment in outdoor recreation enterprises.

Recreation agencies keep current with the changing needs and desires of the user, and be responsive to them.

More emphasis be placed on land-use controls to supplement fee simple acquisition, particularly on lands designed for buffering and intended for low-intensity use. Flood plain zoning, deed restrictions, life tenancies, lease-back or sell-back options, and access easements could be useful in expanding the public recreation resource base of the basin.

Recreation use during mid-week and early and late season be encouraged to gain optimum use of facilities and to reduce peak-period crowding. Dispersion of recreation users be promoted by publicizing lesser known attractions.

An interagency committee be established to annually review overall basin recreation programs and to make policy recommendations for development in accordance with the basin plan.

Through the leadership of the Federal Water Pollution Control Administration, all Federal agencies which administer recreational lands and water assess their individual situations and adopt strong programs of pollution prevention and abatement. Further, State and local governmental agencies, industry, and private organizations whose operations affect recreational water resources be encouraged to develop and to implement pollution prevention and abatement programs.

The appropriate agencies inventory and evaluate the recreation resource and uses in each municipal supply watershed in the basin. All present and future uses of these watersheds should be carried out in such a manner as will insure protection of the recreation potential. In addition, the responsible agencies should, on a continuing basis, determine the rule of these watersheds in satisfying public outdoor recreation needs.

A study be initiated by the State in cooperation with the Federal agencies to determine action necessary to protect irreplaceable resources of natural, archeological, and historical interest. Primary emphasis should be placed on resources in immediate danger of loss through construction, inundation, or other factors.

Further research be conducted on the relationship between water-oriented outdoor recreation activities and water quantity and quality. It is particularly important to determine desirable minimum and optimum streamflows for outdoor recreation enhancement.

Federal, State, and local programs be initiated to identify, preserve, and manage a network of free-flowing streams. Potential scenic streams should be studied in detail to determine their capabilities for meeting a portion of the water-related demands in the basin.

An accelerated public information and education program be developed concerning the role of the public in the protection of outdoor recreation resources from vandalism, misuse, and pollution.

An analysis of the comprehensive plan with respect to outdoor recreation proposals is contained in Appendix M - Plan Formulation.



Photo V-4 The State-Federal program now underway on the Willamette would provide a series of parks, greenspace, and access points. (O.S.H.D. Photo)

ADDENDA

ADDENDUM A - SUBBASIN ANALYSES



This addendum presents an analysis of outdoor recreation in each of the 11 subbasins and along the Willamette River. Recreation facilities and use are inventoried and needs are projected for 1980, 2000, and 2020. A possible plan for each subbasin and for the area along the Willamette River is developed. These plans were formulated from a single-purpose point of view and include possibilities for improvement and extension of existing areas and facilities as well as development of new ones. Potential reservoir sites are evaluated as to their ability to satisfy recreation needs. These sites appeared, from preliminary investigations, to hold the greatest potential. Further study has eliminated some sites from consideration and other sites have been added. Therefore, the basin plan developed in Appendix M may not include the same reservoirs nor all of the reservoirs recommended herein.

The minimum flows shown in the subbasin reports were established using criteria relating to the aesthetic and general recreation values of streamflows, and are not necessarily the same as other functional requirements. These criteria were developed to reflect flows necessary to preserve these values.



WILLAMETTE RIVER RECREATION WATERWAY

PORTLAND BASIN

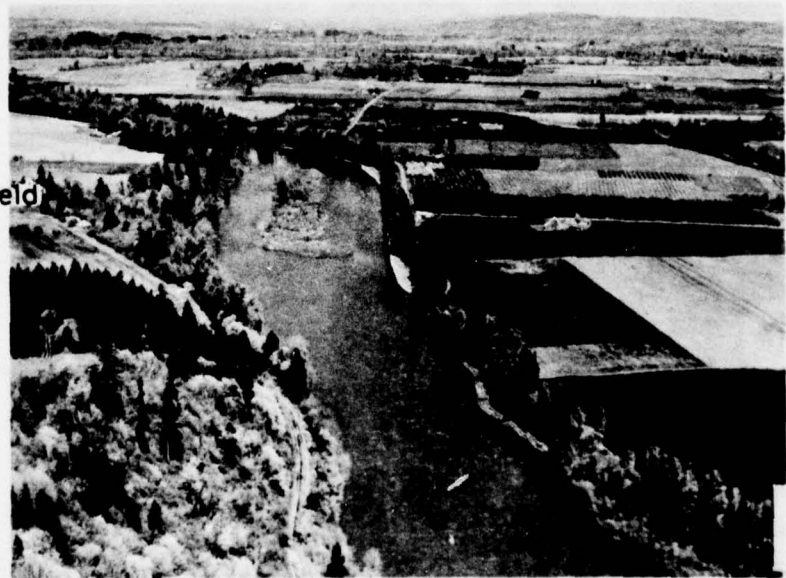
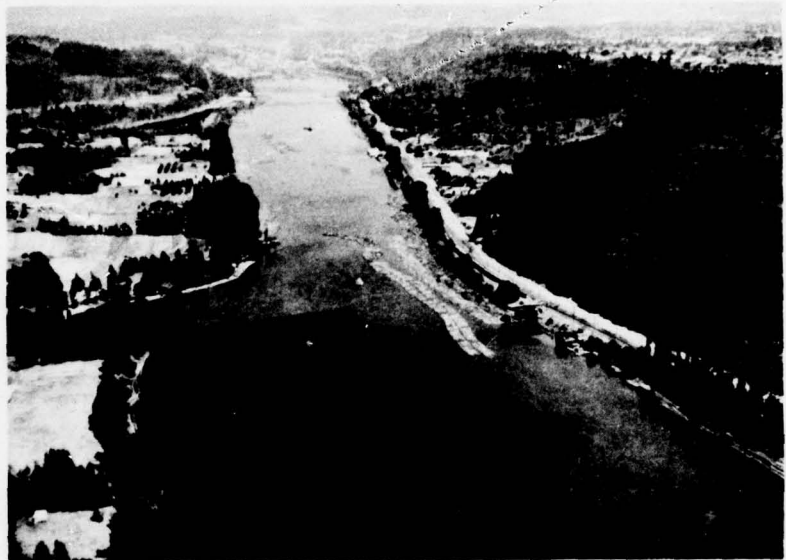
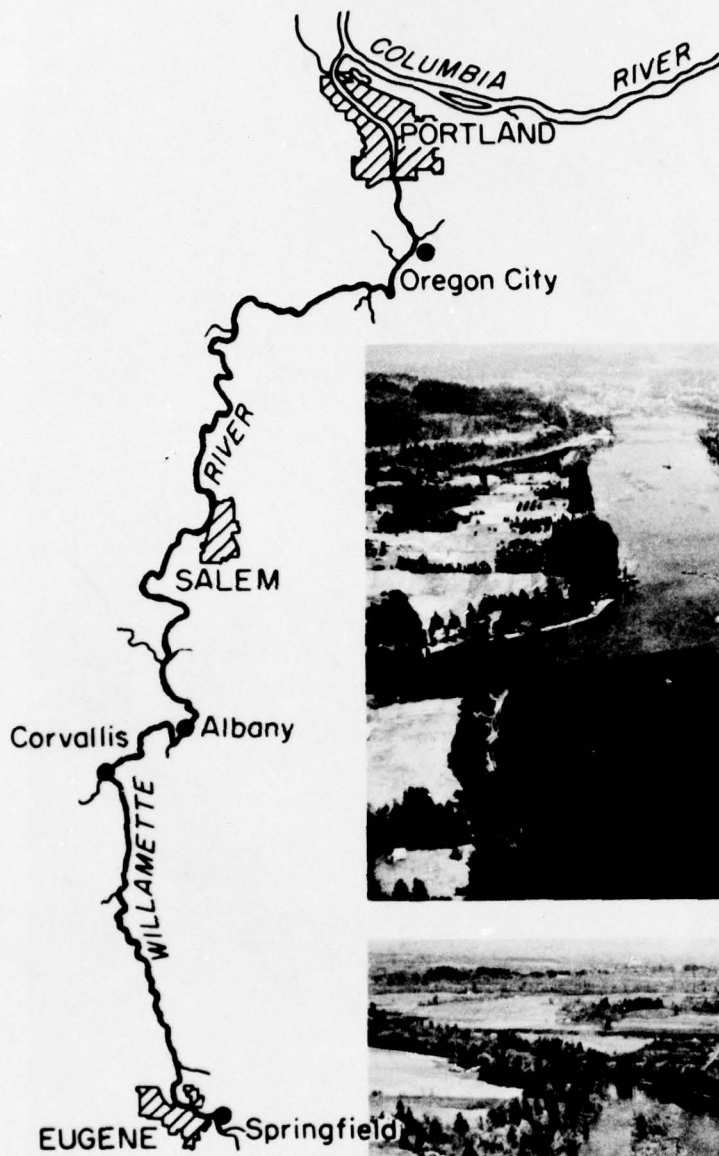


CORVALLIS



FLOOD PLAIN





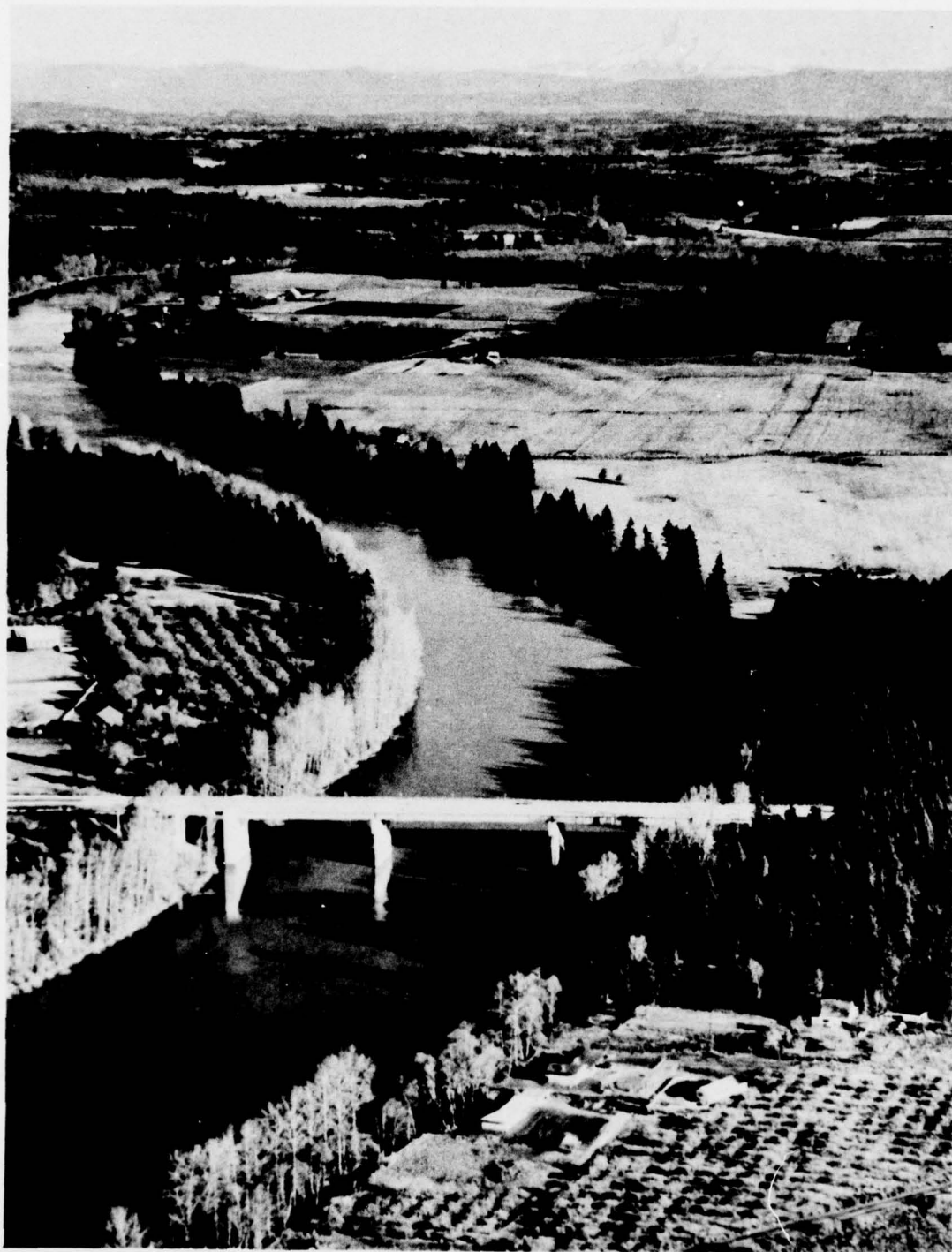


Photo A-1 Willamette River is the primary water-oriented outdoor recreation resource in the basin. If properly developed, the river could satisfy nearly 27 million recreation days use annually. (O.S.H.D. Photo)

WILLAMETTE RIVER RECREATION WATERWAY

Introduction

The Willamette River remains, after 100 years during which the great valley it traverses has developed, a relatively unknown waterway. Yet, as a recreation resource, it has the potential to play an important role in the total recreation picture locally, regionally, and perhaps even nationally. This presentation is an assessment of the recreation values and a measurement of the capability of the river and its related lands to support public recreation use. It should be regarded as an overlay superimposed on the subbasin presentations immediately following. However, the inventory of capacity presented here is excluded from the subbasin presentations.

General Description

The Willamette River Recreation Waterway is that part of the river system which extends throughout the central portion of the Willamette Basin. It encompasses the Willamette River and those extensions of its principal tributaries where any reasonable combination of the following criteria apply:

1. The tributary is generally a broad, relatively quiet body of water which contains a variety of scenic and recreational values.
2. The tributary could conveniently serve a heavy concentration of population.
3. The tributary may provide opportunity either for an extension of activities originating on the Willamette River or for access to the river.

As thus defined, the Recreation Waterway extends along 341 linear stream miles made up of the following components:

Willamette River - 187 miles	Santiam - 12 miles
Multnomah Channel - 22 miles	Marys - 5 miles
Clackamas - 15 miles	McKenzie - 25 miles
Tualatin - 28 miles	Middle Fork - 18 miles
Pudding - 2 miles	Coast Fork - 22 miles
Yamhill - 5 miles	

The Waterway includes riverbank lands containing scenic and recreational potential. Generally, these include most of the flood-plain areas and higher lands which provide good sites for water-related recreation activities. Land and water resources with substantial recreation potential within the Recreation Waterway are estimated to be in excess of 100,000 acres.

The river itself is divided into two distinct physiographic segments. In the Upper and Middle Subareas, the river traverses relatively flat land and has numerous braided channels. Between urban centers, agriculture is the predominant use of adjacent land.

In the Lower Subarea, the character of the river changes. Downstream from Newberg, topography restricts the flow to one incised channel running through mixed rural and urban land. At Oregon City, the river spills over Willamette Falls and becomes a broad estuary whose velocity depends on ocean tides and flow of the Columbia River. Residential land crowds the estuary, roads line the banks in the heart of the City of Portland, and commercial and industrial facilities of Portland Harbor dominate the lower part of the river.

Population

On its wandering course, the Willamette River passes through the greatest population centers in the State. Of the 1.3 million residents of the Willamette Basin, 860,000 or 66 percent are urban residents. Most of the people live in the Portland metropolitan area and are in close proximity to the river.



*Photo A-2 In the past the Willamette River aided exploration and determined the location of settlements.
(O.S.H.D. Photo)*

Trends

Through time, the Willamette River has alternated between a boon and a threat to the development of the basin. Throughout most of the 19th century, civilization in the basin was river-oriented. It aided exploration and determined the location of settlements. It provided the principal means of travel and transportation. The fish in its waters and game on its flood plains were a reliable source of food and its bottom lands nourished plentiful crops.

During the 20th century the river was more of a hinderance than a help. The values of this century have been oriented landward. The dynamics of industry, commerce, and governmental services determined the direction of urban growth, and the stereotyped patterns of urban development moved out over the dry, level countryside. Overland travel and transportation were more efficient than river traffic, and engineers located the highways and railroads as far from the influence of the river as possible. Developments which had focused on the river deteriorated and became pockets of urban blight. Flood-plain lands had uncontrolled conditions and were thus regarded as wasteland.

Early in this century, the river began to be used as a sewer for dispersing wastes from urban areas. Pollution increased rapidly to the point that the river became unfit for human contact. By mid-century, the river was regarded as a topographical handicap interfering with urban development.

By this time, however, new forces were active in the control of the destructive powers of the river and were converting it to a prime resource for domestic service. The Willamette Basin Project, which was first authorized in 1938, brought construction of water-storage facilities of 1,200,000 acre-feet capacity by 1966 and an extensive system of bank protection and channel improvement works. The project was authorized for flood control, navigation, irrigation, and power where feasible. Subsequent changes in national policy, however, have given recognition to municipal and industrial water supply, fish and wildlife enhancement, recreation, and water pollution control as potentially beneficial functions.

The water pollution control program of the State Sanitary Authority, authorized in 1936, gained momentum by the mid-60's. Health authorities are now making cautious predictions that much of Lane County's segment of the Willamette will be suitable for human contact before 1970. There is a prognosis for downstream improvement progressively thereafter.

Major effects of these programs are reduced flood damage, decreasing water pollution, and increased summer flows, with consequent dilution of impurities, improved fish and wildlife habitat, and enhanced public recreation opportunities throughout the Recreation Waterway.

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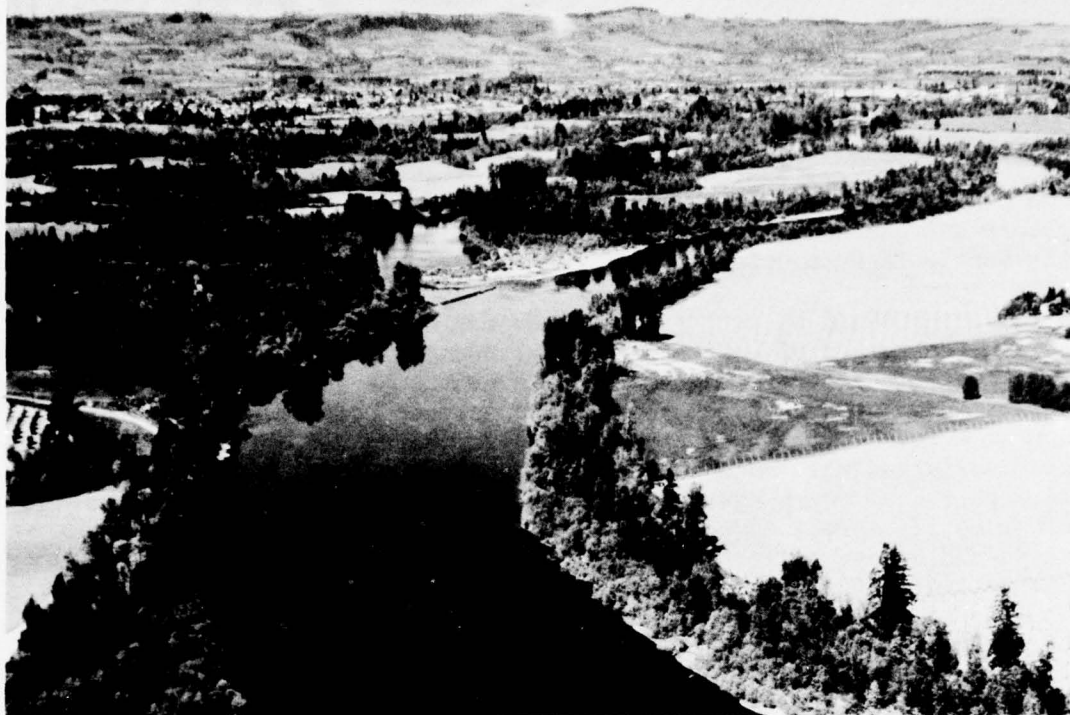
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Major effects of these programs are reduced flood damage, decreasing water pollution, and increased summer flows, with consequent dilution of impurities, improved fish and wildlife habitat, and enhanced public recreation opportunities throughout the Recreation Waterway.



*Photo A-3 The Willamette River provides a green strip of bold contrast to the urban & rural lands through which it flows.
(O.S.H.D. Photo)*

Recreation Features

The Willamette River provides a green strip of bold contrast to the urban and rural lands through which it flows. Except at revetments, the river banks are lined with trees which shut out the valley floor and form a broad, dramatic corridor of silent primitive world for the pleasure boater. Throughout much of its length, it forms an intricate system of multiple channels, sloughs, and oxbow lakes. Forty-nine islands (with an average size of 150 acres in the Upper Subarea, 200 acres in the Middle Subarea, and six acres in the Lower) are located in the river. The rich alluvial soils nourish impenetrable jungles of trees, shrubs, and tangled ground cover.

The fauna of the basin concentrate in unusual variety and number within the Waterway. Both warm- and cold-water fish species exist here and constitute one of the most underused fisheries in the State. With the new fishway at Willamette Falls, other improvements, and present programs to improve fish production, dramatic increases in the anadromous fish runs are expected in the near future.



*Photo A-4 Wildlife thrives along the Willamette River Waterway.
(U.S.F.S. Photo)*

A great variety of birdlife, including migratory waterfowl, is found here. There is favorable habitat for small mammals such as raccoons, rabbits, skunks, beaver, mink, otter, and muskrat and for predators such as the red and grey fox and coyote. Deer are numerous and bear are occasionally seen.

Most of Oregon's early history is associated with places on the banks of the Willamette River. The ancient structures of Portland's lower waterfront, the Hudson Bay Company at Oregon City, the cradle of State government at Champoeg State Park, the quaint ferries near Canby and Wheatland, the 19th Century residences in small riverside communities, such as Herbert Hoover's boyhood home in Newberg, and the remnants of ancient farm structures in Yamhill, Marion, and Polk Counties are evidence of an Oregon civilization extending back into the early 19th Century.

Present Use

The 1963 recreation use of the Willamette River is estimated at 2,500,000 recreation days. Most of this use occurred in or near the urban centers and was by the local population. Based on an urban population of approximately 850,000, this would amount to a per capita rate of about three, which appears reasonable in view of the undeveloped state of the Waterway and the other resources and developments within one-hour's drive of the population centers.

Recreation Demand

The following tabulation summarizes the demand by subbasin which could reasonably accrue to the Waterway if land and facilities were available. These figures should not be confused with the actual development programs which are outlined later in this section. The potential demand shown here is much higher, at least in the early years, than is practical and possible to satisfy on the Waterway. Much of this demand must consequently be satisfied elsewhere.

*Potential recreation demand
for the waterway system, by subbasin
(1,000's of recreation-days)*

	<u>1980</u>	<u>2000</u>	<u>2020</u>
1. Coast Fork	114.3	187.8	316.2
2. Middle Fork	161.4	269.1	450.0
3. McKenzie	119.6	182.2	330.0
4. Long Tom	490.4	824.4	1,299.6
Subtotal	<u>885.7</u>	<u>1,463.5</u>	<u>2,359.8</u>
Subarea Capacity	5,288.9	5,288.9	5,288.9
5. Santiam	271.6	424.0	672.1
6. Coast Range	2,350.6	3,700.2	5,775.0
7. Pudding	<u>1,982.4</u>	<u>2,999.5</u>	<u>4,385.5</u>
Subtotal	<u>4,704.6</u>	<u>7,123.7</u>	<u>10,832.6</u>
Subarea Capacity	12,625.6	12,625.6	12,625.6
8. Tualatin	1,282.4	2,149.0	4,002.6
9. Clackamas	1,157.8	1,946.0	3,396.4
10. Columbia	1,796.0	3,013.0	6,419.5
11. Sandy	<u>86.5</u>	<u>145.4</u>	<u>247.7</u>
Subtotal	<u>4,322.7</u>	<u>7,253.4</u>	<u>14,066.2</u>
Subarea Capacity	<u>8,919.6</u>	<u>8,919.6</u>	<u>8,919.6</u>
Total Demand	9,913.0	15,840.6	27,294.6
Total Capacity	26,834.1	26,834.1	26,834.1

Recreation Capacity

Although basic resources of 100,000 acres or more lie within the Waterway limits, it appears reasonable to anticipate use of only about one-third of this acreage within the planning period. Of the 41 existing sites covering 8,848 acres, the Forest Park hillside in northwest Portland accounts for 3,500 acres and local government holdings in the Eugene area account for nearly half of the balance. Vast stretches of the river are presently inaccessible. Most of the effective acreage needed must still be acquired.

The following tabulation summarizes the capacity of the basic resource supply of the Waterway. The figures reflect total supply capacity regardless of ownership. The capacity in recreation-days per year was calculated assuming a standard of 400 recreation-days per year for each surface acre of water. It was further assumed that 10 percent of the land area would be developed to Class I standard with a 3,000-recreation-day-per-acre capacity. The remaining land acreage was figured as Class II with a standard of 250 recreation-days per acre.

Capacity of Waterway, by subarea

	<u>Upper</u>	<u>Middle</u>	<u>Lower</u>	<u>Total</u>
Water				
Acres	3,366	7,634	9,422	20,422
Recreation-Days (1,000's)	1,346	3,054	3,769	8,169
Land				
Acres	7,700	18,235	9,812	35,747
Recreation-Days (1,000's)	3,943	9,572	5,151	18,666
Total Supply				
Recreation-Days (1,000's)	5,289	12,626	8,920	26,835

Major Recreation Problems

Realization of any substantial part of the Willamette Waterway's vast potential will depend on the success of future efforts to overcome the following problems:

Limited Recreation Attraction

The public is now making only limited use of existing water areas, parks, and recreation access points on the Willamette River. This is largely because of the unattractive nature of the poor water quality. At present, the general recreation experience available on the river does not measure up to the higher quality experiences found elsewhere in the Willamette Basin and in the State.

Land Ownership and Management Patterns

Throughout much of the basin, the job of implementing resource development programs is greatly simplified by the presence of vast public ownerships. However, the Willamette Waterway is generally a mosaic of small independent ownerships. Development of rational patterns of land ownership and management is a critical need, not only for recreation, but also for other basic land use functions. Capability of

many agencies is limited by jurisdictional restrictions. Many Federal agencies have no jurisdiction and local agencies are limited to fragments of the overall resource. In many instances, agencies having adequate scope in jurisdiction have not yet evolved administrative policy and financial support for effective action programs.

Financial Resources

In the existing situation, any Willamette Recreation Waterway program which lies outside the province of Federal agencies faces problems with a State government which to date has committed only limited financial resources to recreation areas on the river, and thus, by default, depends on the responsiveness and financial resources of local government agencies. Local government entities are frequently dominated by ultra-conservative interests, and their decisions makers are traditionally slow to respond to new demands.

Substantial participation by the State and considerable grant assistance from the Federal agencies will be required to satisfy anticipated demands upon the Waterway System.

Flooding

The susceptibility of the riverbank areas to flooding conditions makes the provision of permanent park facilities, access roads, and trails a problem in these areas. Periodic flooding of lands by the river reduces the potential and attractiveness of these recreation sites. However, this periodic flooding has kept the flood-plain lands in an undeveloped state which has been beneficial to open space programs.

Pollution

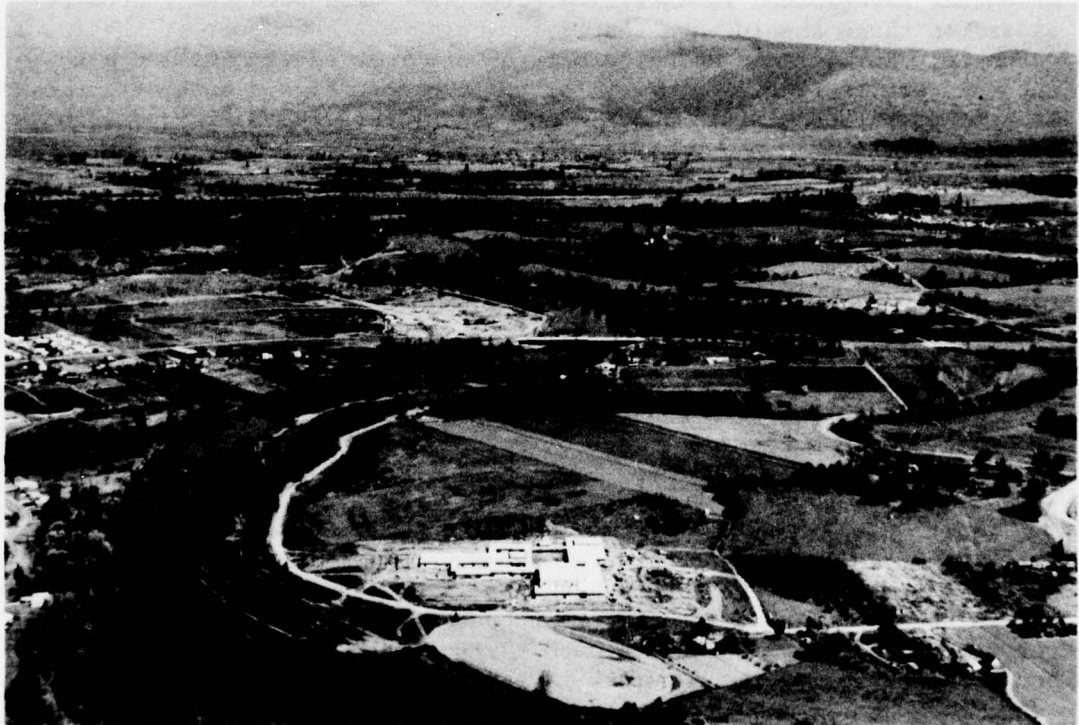
Water quality throughout a major part of the Willamette Waterway does not meet acceptable standards for human contact. Likewise, throughout a large part of the system, organic pollution lowers oxygen levels and promotes accumulations of slime. Nitrates from organic decomposition and those leached from farmlands promote heavy algae growth. Existing water quality severely restricts the activities which the Waterway could support, limits its scenic value, and adversely affects public attitude necessary to support a conservation and development program. Pollution control and stream flow regulation must be improved if anticipated demands are to be met.

Air pollution due to urban concentration, industrial plants, and climatic conditions is a problem in the Willamette Valley which must be overcome if the area is to provide high quality recreation experiences.

Planning

Prior to this study, no comprehensive recreation planning for the Willamette River had been undertaken. Strongest planning efforts have been focused on component parts at the local level, but these have been concerned principally with the urbanizing segments of the system. Recently, the State Park Division's Willamette Greenway Task Force study and the State Game Commission's river access study have contributed initial efforts to Willamette Waterway comprehensive planning. The State has employed a Willamette River Park System director who, together with local government officials and the State park planning staff, has initiated more detailed planning studies.

The Statewide planning program of the State Park Division has considerable potential. Effective interlocking programs by State and local agencies for the Willamette, or an intensive ad hoc study by the appropriate Federal agency, will be needed to develop the logic and justification for effective resource management programs.



*Photo A-5 Floodplain zoning would reduce losses from flooding as well as preserve natural areas for recreation.
(O.S.H.D. Photo)*

Land Use Control

Segregation of land functions to preservation of resource potential will require more effective land use control measures. Presently, only cities and home rule counties have authority to establish such controls, and political pressures have effectively resisted workable zoning measures in many localities. Statutory authorization at the State level, whose trust would be basinwide, of zoning and/or easement devices seems necessary to conserve Waterway lands.

Recreation and Open Space Potential

After pollution and other problems are resolved, the Willamette River Recreation Waterway could supply more water-associated satisfaction to more people closer to their homes than any body of water in Oregon. The Willamette Waterway is effectively located to be reached easily by residents of the many population centers throughout the basin.

Public recreation and open space on riverside lands does not, on the whole, compete with other legitimate public and private land uses. Essential river-based industries are few; and with adequate controls, sites for these should have little impact on the character of the total resource. Rural lands which border the river at revetments and high cutbanks are of little interest for public recreation. Moreover, the low, wooded flood plains, the sloughs, backwaters, bars, islands, and vegetatively-stabilized banks of high recreation value are agriculturally submarginal. Controlled development of recreation resources will enhance other related land use values, and seldom should there be real conflicts if sound advanced planning and land use controls keep ahead of haphazard development.

Public agencies presently hold extensive property rights along the river. A long-range program of needed acquisition should not be an unreasonable public burden. Long-range public recreation acquisition and development programs may also be integrated with other public works programs to the mutual advantage of both.

Projected Use Patterns

The Middle Subarea portion of the Waterway is expected to receive the most recreation use even though the largest population is concentrated in the Lower Subarea. This is because of the abundance of this resource in the Middle Subarea, and the pollution, industrialization, and urbanization of the Waterway in the Lower Subarea.

Recreation Plan

To establish the Willamette Recreation Waterway, it is recommended that the following elements be instituted. These would maximize the quantitative and qualitative benefits that could be provided by the Waterway.

1. Preserve existing scenic and recreation values.

Establish flood plain and scenic conservation zones, and an acquisition program at the State level for Waterway lands. These should be based on a land use plan in which the lands along the river and flood plain are classified for highest and best use, including the possibility of recreation enhancement through coordinated gravel mining.

Establish legislation providing for nuisance control and for rehabilitation after gravel-mining and other incompatible uses.

2. Assemble water-related public ownerships of adequate size, character, and location to support anticipated recreation demands.

Acquire at earliest opportunity a few strategic large reservations (1,000 acres or more) in areas of anticipated population growth before price escalation and adverse development threaten future conservation.

Extend existing riverbank parklands and existing and future revetment easements to permit full realization and use of the recreation potential and reclaim incompatible developments in urban areas through redevelopment programs.

Acquire a rational system of access sites by purchase and retention of public rights-of-way or dedicated access routes by local government.

Acquire corridors to connect intensive-use areas.

3. Develop access and public-use accommodations to make potential resources available for public use.

It is estimated that facilities will be needed to handle an additional 2,239,000 recreation-days use by 1980. This projection will be considerably higher if other recreation development programs are not carried out simultaneously outside the Waterway system. A suggested plan of development for the Waterway, in terms of recreation days by administrative agency, is presented by subarea.

In the Upper Subarea, facilities to handle about 229,000 recreation-days should be constructed on the Waterway by 1980. Nearly all of these should be for high density and general recreation use. The appropriate agencies to construct these facilities are suggested as follows:

County - 162,000 recreation-days
State - 47,000 recreation-days
Private - 20,000 recreation-days

In the Middle Subarea, facilities to handle 1,058,000 additional recreation-days are needed on this section of the Waterway by 1980. Suggested agency responsibilities are as follows:

County - 332,000 recreation-days
State - 634,000 recreation-days
Private - 92,000 recreation-days

In the Lower Subarea, additional facilities to satisfy 952,000 recreation-days are needed on this portion of the Waterway by 1980. Suggested agency responsibilities are as follows:

Local - 70,000 recreation-days
County - 229,000 recreation-days
State - 416,000 recreation-days
Private - 113,000 recreation-days
Other - 124,000 recreation-days

4. Enhance water quality.

Establish control of pollution at the source, and programs to maintain adequate minimum streamflows.

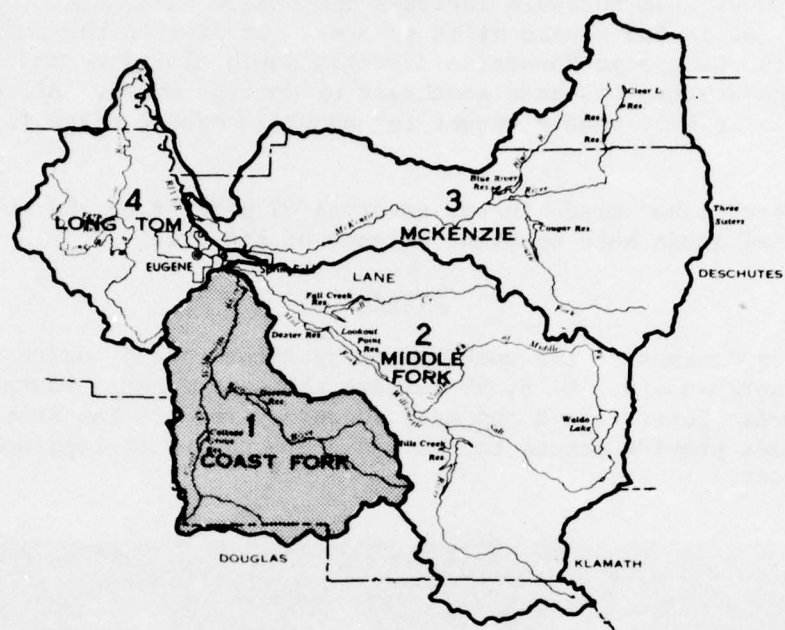
5. Control air pollution.

6. Enhance the fishing resource.

Estimated development costs for the Willamette River Recreational Waterway are:

1980	\$18,000,000
2000	11,500,000
2020	18,000,000

SUBBASIN 1 - COAST FORK



SUBBASIN 1 - COAST FORK

Description

The Coast Fork Subbasin includes the entire Willamette Coast Fork watershed and is 665 square miles in area. It lies on the northern slope of the Calapooya Mountains directly south of Eugene and includes part of the Western Cascades southeast of Cottage Grove. All of the subbasin is in Lane County except for about 25 square miles in Douglas County.

Forested lands predominate, covering 87 percent of the subbasin. Agricultural lands make up eight percent of the area.

Access

Primary access to the subbasin is by Interstate 5, which traverses the area north-south. U. S. 99 follows the same general route and connects with Interstate 5 and many secondary roads. The State and county roads provide access to most of the area and to logging and forest roads.

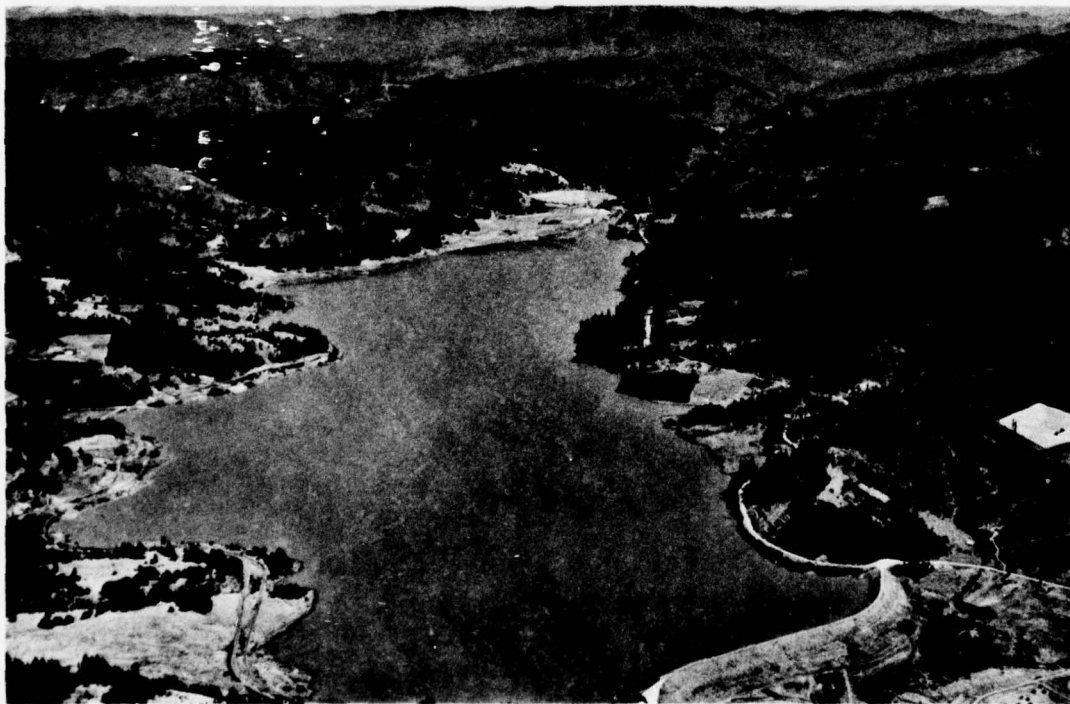


Photo A-6 Dorena Reservoir provides water oriented outdoor recreation opportunities for many residents of the Coast Fork Subbasin. (U.S.C.E. Photo)

Population and Economy

In 1960, the subbasin had a population of 17,000 and an average density of 26 people per square mile.

Projected population

<u>Year</u>	<u>Resident Population</u>	<u>Density Per Square Mile</u>	<u>Participating Population</u>
1980	29,800	45	45,300
2000	41,200	62	62,400
2020	59,500	89	90,800

About 25 percent of the 1960 subbasin population lived in Cottage Grove (3,895) and Creswell (760). Future population increases are expected to remain at about the same ratio. All other towns in the subbasin have less than 500 people.

The major employment base is the forest products industry. Agriculture is also important, with 580 farms reported in the basin in 1959. Recreation resources provide economic benefit and will become more important as development continues.

Recreation Features

Improved recreation areas are small and have few camping and picnicking units, usually on a reservoir, river, or stream. City park development is provided at Cottage Grove, but few facilities are provided by the other towns.

About 600 of the 1,000 stream miles in the subbasin are perennial. Major streams and their lengths are:

	<u>Length (miles)</u>	<u>Elevation Drop (feet)</u>
Coast Fork Willamette		
above Cottage Grove Reservoir	7	170
below Cottage Grove Reservoir	30	280
Row River		
above Dorena Reservoir	9	280
below Dorena Reservoir	8	130
Layng Creek	15	3,370
Brice Creek	16	2,730
Sharps Creek	16	3,850
Mosby Creek	22	890

Present Use

Reported recreation use for 1963 was 297,400 recreation days. The distribution of visitation by administering agency is:

	<u>1963 Reported Recreation Days</u>
Corps of Engineers	160,000
Forest Service	14,800
State of Oregon	3,000
County and City	<u>119,600</u>
Total	297,400

About 93 percent of the reported use in the subbasin occurred at Cottage Grove and Dorena Reservoirs. Because of incomplete records, not all of the use in the subbasin was reported.

Demand

*Estimated demand for water-related
and nonwater-related activities
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>	<u>Nonwater-related</u>	<u>Total</u>
1980	762	402	1,164
2000	1,252	658	1,910
2020	2,108	1,065	3,173

Capacity

The existing capacity of developed recreation areas appears to be adequate to meet present demands. There are 2,977 acres of recreation land containing some development. The total reported recreation land available is 306,983 acres.

The classified recreation land and resultant nonwater-related capacity, by BOR classification is shown in the following tabulation:

Classified recreation land by BOR Class, 1963

<u>Class</u>	<u>Acres</u>	<u>Nonwater-Related Capacity (Recreation-Days 1,000's)</u>
I	31	93
II	927	232
III	305,982	612
IV	43	<u>4</u>
	Total	941

In addition, there are approximately 150 miles of major streams and 3,000 surface acres of reservoir water with a total water-related capacity of 1,650,000 recreation-days.

Problems

Improper publicity and promotion has resulted in underutilization of many of the subbasin's lesser-known areas, and overuse of the better known sites.

Cottage Grove and Dorena Reservoirs have heavy summer pool draw-down which tends to limit recreation opportunities. Excessive drawdown exposes undesirable shoreline and makes boating hazardous, limits swimming, and detracts from scenic quality. Other subbasin problems include a general lack of recreation facilities, needed cooperative planning by all agencies, poor water quality, and limited quantities of water for recreation.

Potential

The Coast Fork subbasin is not particularly endowed with recreation attractions. However, the forests, creeks, rivers, and reservoirs do offer significant outdoor recreation potential. Historical interpretation of the Bohemia mining district is a potential recreation attraction.

Needs

Based on previous capacity and demand calculations, the subbasin needs and surpluses are summarized in the following tabulation:

*Summary of surplus and need for outdoor recreation 1/
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>			<u>Nonwater-Related</u>		
	<u>Demand</u>	<u>Capacity</u>	<u>Need or Surplus</u>	<u>Demand</u>	<u>Capacity</u>	<u>Need or Surplus</u>
1980	762	1,650	+888	402	941	+539
2000	1,252	1,650	+398	658	941	+283
2020	2,108	1,650	-458	1,065	941	-124

1/ (-) indicates need, (+) indicates surplus

Statistical surpluses of both water-related and nonwater-related capacity exist at least through the year 2000. However, qualitative needs must also be considered.

Water-Related

Nearly all of the existing recreation areas have water association to a river or reservoir. If water levels could be maintained near full pool during the recreation season and if shoreline facilities were completed, the reservoirs would have a capacity of 600,000 recreation days

annually. Improved water quality throughout the recreation season is important to future planning efforts. Streamflows should be maintained to accommodate recreation and to minimize pollution.

Cottage Grove is now engaged in a pilot program of sewage treatment to abate pollution. Its newly completed tertiary treatment plant is capable of releasing chlorinated effluent more nearly pure than the river into which it flows.

Nonwater-Related

Except for certain activities such as skiing and mountain climbing, the existing supply is sufficient to meet the demands until 2020. These other activities must be satisfied outside the subbasin where the proper resources are available.

Goals

The primary goal for this subbasin is for well-planned development to accommodate existing and future demands rather than adoption of a major program of land acquisition. Expansion and improvement of existing facilities is an immediate goal. Scenic drives should be identified and viewpoints provided where possible.

As recreation demands increase, more developed private recreation areas will be needed. Areas will probably be small, however, because of attendant extensive capital outlay requirements and the competition with publicly operated recreation areas. Private development should be assisted and encouraged.

A primary goal related to water-associated use is preservation of water quality in the reservoirs. Modification of drawdown schedules to retain near full pool water level throughout the recreation season is desirable.

Recreation Plan

Improvement of Existing Areas

Twenty-seven recreation areas have been identified in the subbasin. Most areas are in need of additional facilities, repair of existing facilities, or improvement and modernization of facilities. Sanitation, potable water supply, and parking are insufficient.

Baker Bay at Dorena Reservoir needs to be expanded and reorganized to better utilize existing lands. The Bohemia mining area needs a potable water supply and sanitary facilities, and Cedar Creek Park should be expanded to include Brice Creek Park. Generally, all areas need modernization and reorganization.

Development of New Areas

From a water-based recreation standpoint, it would be desirable to create new water impoundments to supply downstream needs instead of using the stored water at Cottage Grove and Dorena Reservoirs during the recreation season. Also, smaller impoundments for new recreation areas could be created by cleaning, clearing, and deepening existing marsh areas. Two such areas within Umpqua National Forest could accommodate limited fishing and general water use and would cover about two acres each.

Fifteen proposed recreation areas covering 360 acres have been identified. Most of them are adjacent to or near a creek or river. The areas could accommodate trails, scenic attractions, about 100 campsites, 50 picnic sites, and two swimming locations.

Water-Related Projects

Several potential water storage sites within the subbasin have been investigated. All would have multi-purpose objectives, primarily irrigation, flood control, municipal and industrial water, fish and wildlife, and recreation. They include:

<u>Site</u>	<u>Stream</u>	<u>Storage Capacity</u> (acre-feet)	<u>Surface Area</u> (acres)
Unnamed	Camas Swale Creek	4,000-20,000	400-825
Abrams	Mosby Creek	20,000-80,000	490-920
Unnamed	North Fork Camas Swale Creek	1,400- 6,300	115-275
Unnamed	Unnamed (S32, T18S, R2W)	2,000- 9,000	100-340

A preliminary estimate of use at the Abrams site is 150,000 recreation days, assuming a full pool for one-half the recreation season. Greater use would also be derived by allowing retention of full storage at Dorena and Cottage Grove Reservoirs. It would amount to about 350,000 more recreation days annually. The other sites would add additional capacity which should result in meeting water-related needs through year 2020.

Benefits resulting from recreation use at the Abrams Site are estimated at 90 cents per recreation day. The additional use at Dorena and Cottage Grove Reservoirs is valued at \$1.25 per recreation day.

Preservation of Resources

The rural and forested setting of this subbasin has important scenic value and should be preserved. It will enhance driving for pleasure, sightseeing, and indirectly all other recreation activities. Control of industrialization and urbanization by zoning and developing a land-use plan is needed.

Streamside management of the major streams and rivers to preserve and enhance scenic values is also important. Many streams in the Coast Fork Subbasin are relatively unspoiled and enhance the scenic quality of the region. Demand for clean water from these streams is increasing at accelerated rates.

In addition to preservation of streamflows, every possible means of preserving reservoir pool levels near full pool during the recreation season should be sought. A program to use one reservoir's water to allow others to remain full should be investigated.

Many historical areas of the subbasin are worthy of preservation and have great interpretive value. Work underway by responsible agencies should continue, and assistance by agencies in adjacent subbasins should be solicited.

The following minimum flows would be required to provide favorable conditions during the recreation season for Coast Fork Subbasin streams:

<u>Stream</u>	<u>River Mile Location</u>	<u>Recommended Flow (cubic feet/second)</u>
Coast Fork Willamette River	35.9	100
Coast Fork Willamette River	29.4	125
Coast Fork Willamette River	6.4	200
Row River	13.2	150
Row River	5.5	175
Brice Creek	0.1	75
Mosby Creek	1.0	90
Sharps Creek	0.1	70

Prepared by
WILLAMETTE BASIN TASK FORCE
of the
PACIFIC NORTHWEST RIVER BASINS COMMISSION

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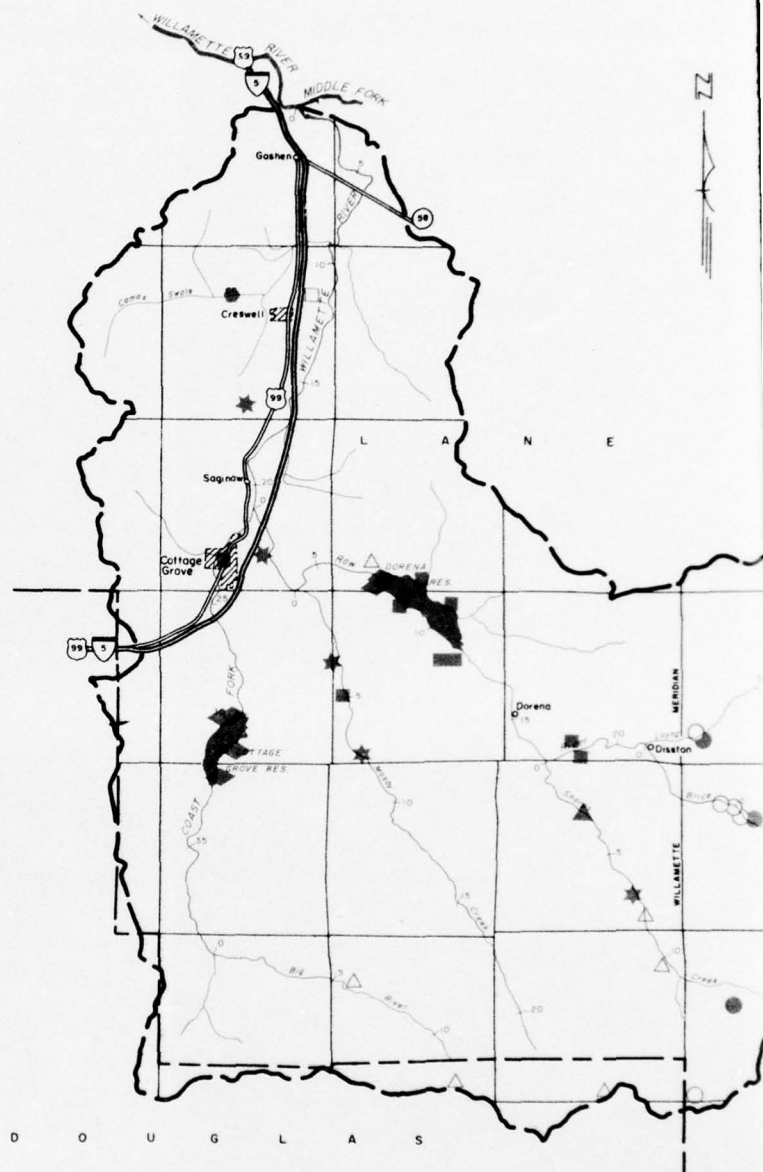
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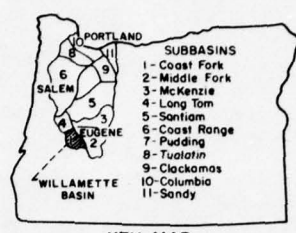
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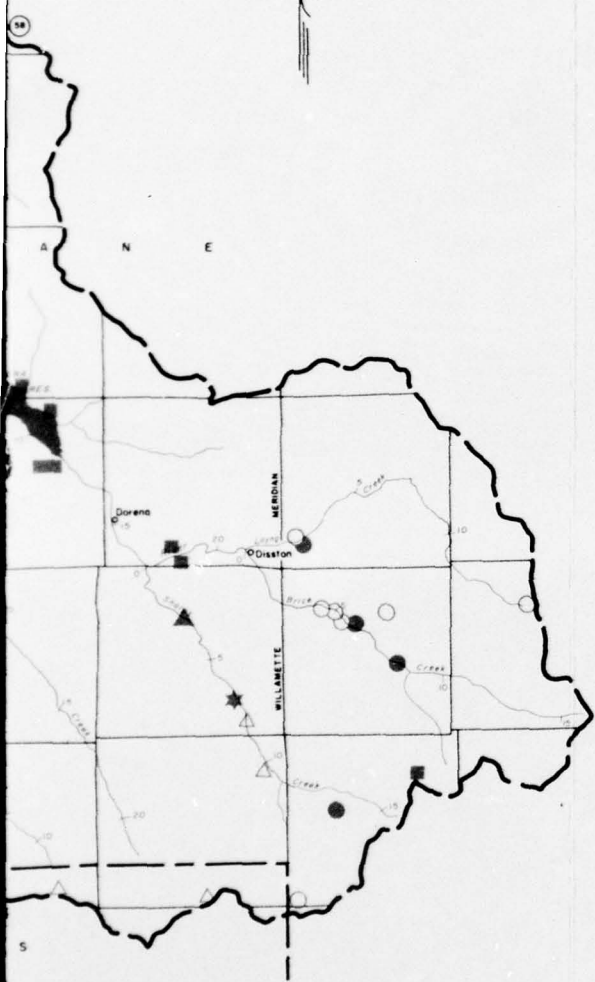
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KEY MAP
SHOWING SUBBASINS



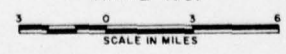
LEGEND

RECREATION SITES EXISTING POTENTIAL

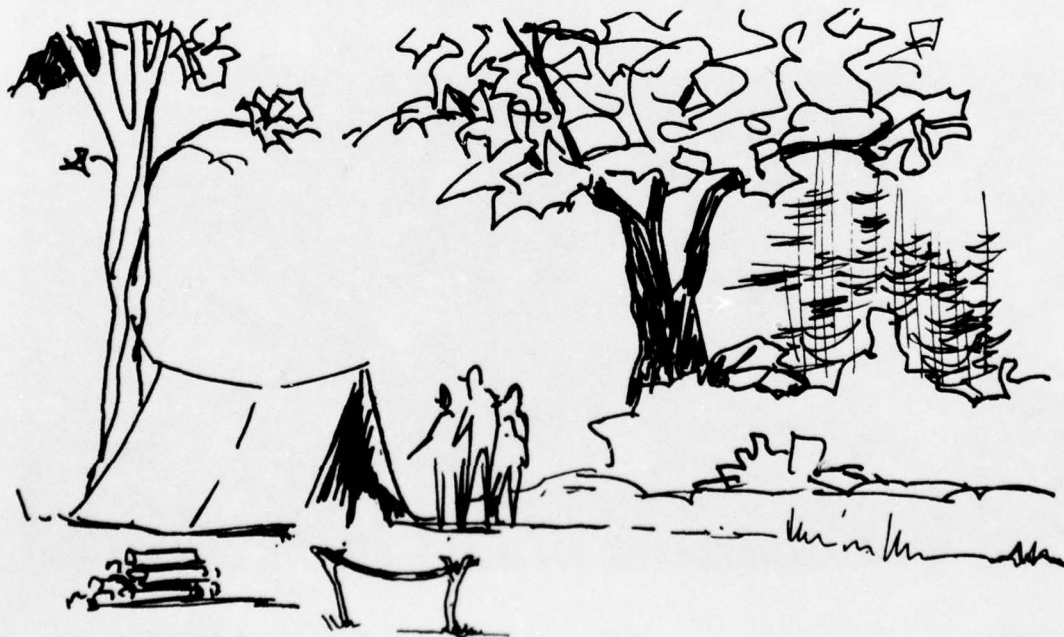
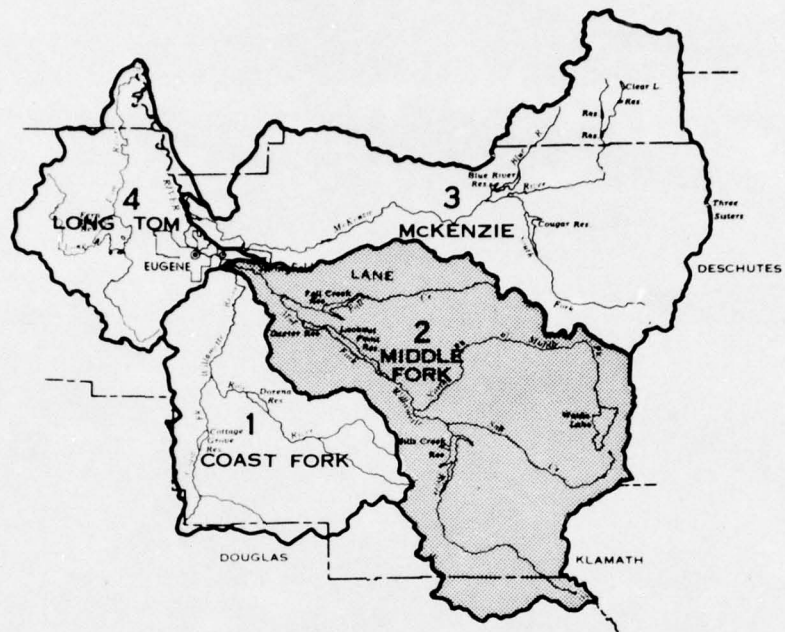
U.S. Forest Service	●	○
State of Oregon	●	○
Bureau of Land Management	▲	△
Corps of Engineers	◆	◇
City - County	■	□
Private	★	☆
Special Dedicated Areas		

COAST FORK WILLAMETTE BASIN, OREGON RECREATION SITES

APRIL 1967



SUBBASIN 2- MIDDLE FORK



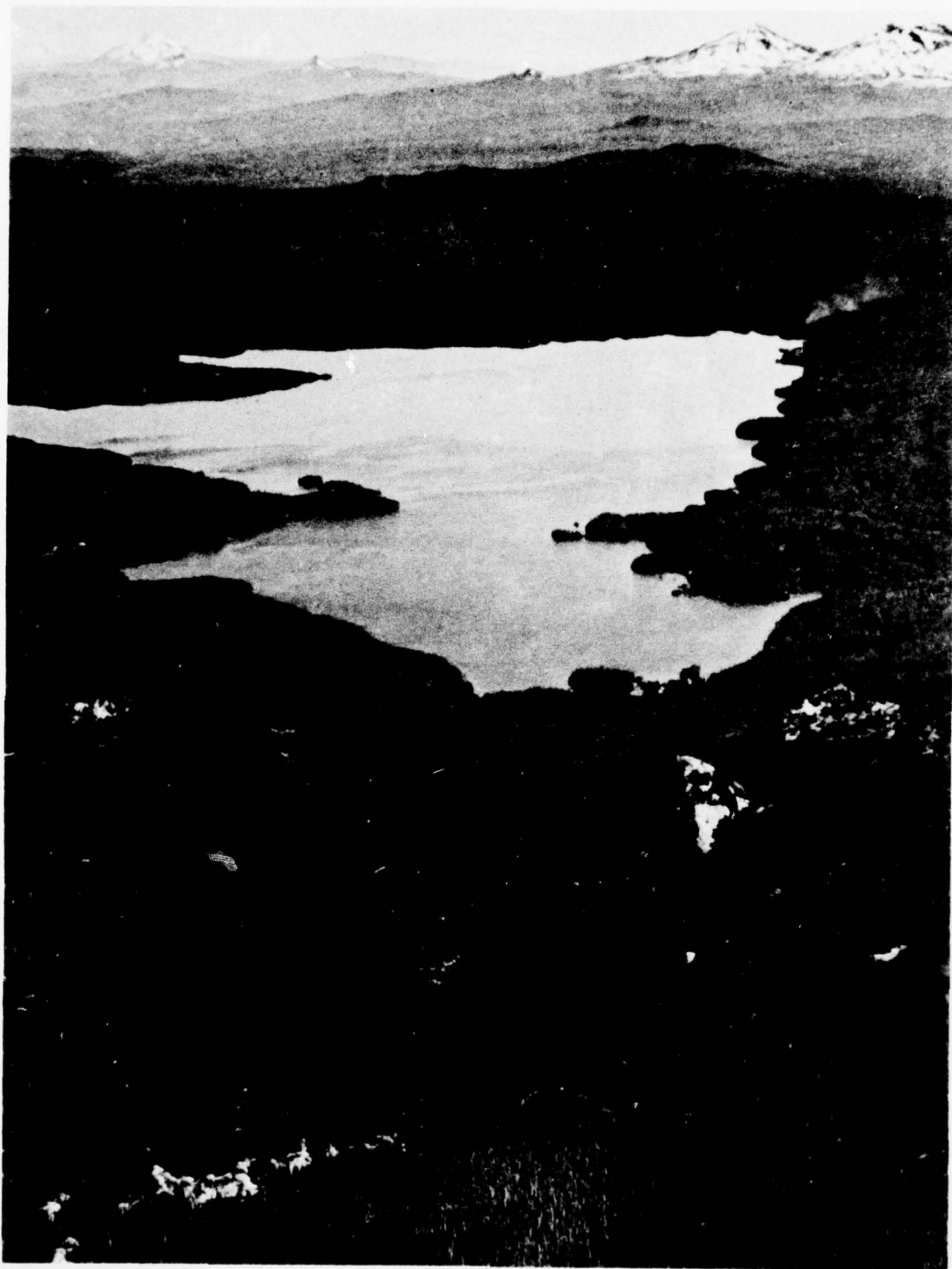


Photo A-7 Waldo Lake, the largest natural lake in the basin is high in the Cascades at the head waters of the North Fork of the Middle Fork of the Willamette River. (U.S.F.S. Photo)

SUBBASIN 2 - MIDDLE FORK

Description

The Middle Fork Subbasin is a wedge-shaped area extending from the Cascade summit to the urban fringe of the Eugene-Springfield metropolitan area. It covers 1,354 square miles, 72 percent of which is heavily forested. Only two percent is devoted to agriculture. The balance is primarily alpine and water area, with a small amount in urban uses.

All streams have steep gradients. Principal tributaries are Lost Creek, Fall Creek, Salmon Creek, Hills Creek, and Salt Creek, almost all of which are fed by heavy winter snow pack. Major bodies of water include Waldo Lake (6,000 acres) and Dexter, Lookout Point, Fall Creek, and Hills Creek Reservoirs. The glacially-scoured Cascade summit plateau, which stretches across the eastern edge of the subbasin, contains 15 lakes of 50 acres or more and more than 100 lakes of smaller size. Almost the whole subbasin lies within Lane County, and nearly 90 percent of it lies within the Willamette National Forest.

Access

Primary north-south access routes to the subbasin are provided by Interstate 5 which touches the western tip, and Oregon 58 which bisects the subbasin in an east-west direction and connects Interstate 5 and U. S. 97. An adequate county-road network supplies the urbanized western end of the subbasin, but recreation access to most of the Middle Fork is dependent on forest access roads, built under private and national forest logging access programs. These roads provide limited access for dispersed area recreation. The Forest Service is extending a major road north from Highway 58 to Waldo Lake and plans to extend this through the high lakes plateau to a connection with U. S. 126 in the McKenzie Subbasin. This will vastly improve access to this vital recreation resource. The Forest Service has established an extensive network of trails throughout the areas under its jurisdiction.

In general, access to the larger bodies of water is good. Highway 58 was constructed so close to the south shores of Dexter and Lookout Point Reservoirs that it prevents physical access to those areas and substantially destroys major recreation values of 20 miles of shoreline. Widening and/or paving of secondary roads around Fall Creek, Lookout Point, and Hills Creek Reservoirs would permit better use of resources which they serve.

Population and Economy

Population of the Middle Fork Subbasin was 9,400 in 1960, a density of seven per square mile. Almost all of the people are concentrated in the small urban fringe area below Dexter Reservoir and in the Westfir-Oakridge community in the center of the subbasin.

Projected population

<u>Year</u>	<u>Resident Population</u>	<u>Density Per Square Mile</u>	<u>Participating Population</u>
1980	16,300	12	34,500
2000	22,400	17	47,600
2020	32,500	24	69,500

A saltatory growth pattern, which may substantially increase these figures, is anticipated by local planners in the Dexter-Lowell-Jasper region, though not in the Oakridge area.

Commercial recreation service is of significance only in the Oakridge area where numerous small-scale operations flourish. Hotspring resorts at McCredie and Kitson Springs near Oakridge, popular earlier in the century, declined rapidly after World War II and have been abandoned. Economic growth will result largely from expansion of service industries associated with suburban development and with recreation and tourism markets which are, as yet, largely untapped.

Present Use

Reported recreation use in 1963 within the subbasin was 955,802 recreation-days. Two-fifths of this was on national forests and the rest was on Corps-of-Engineers-administered, and Lane County areas.

This relatively heavy use in an area with a resident population of only 9,400 is because of out-of-State and out-of-subbasin use. The wealth of available recreation resources and opportunities attract a large amount of this type of use.

Recreation Features

Recreation features of the Middle Fork Subbasin include the high water quality and stability of the river, lake, and reservoir system, the extensive forest lands available for public use, and the broad range of attractions of the Cascade summit country.

The lower river provides numerous opportunities for large urban parks and riverbank recreation corridors. Three reservoirs--Dexter, Fall Creek, and Lookout Point--lie within the half-hour driving range of the metropolitan population, and a fourth, Hills Creek, within the one-hour range. Over 90 percent of stream mileage within the subbasin is in public ownership. The upper reaches include natural curiosities such as the several hot springs above Oakridge, and the spectacular Salt Creek Falls. The Cascade summit area includes the 33,000-acre Waldo Lake recreation area and the 16,200-acre Diamond Peak Wilderness.

Water quality in the Middle Fork River is good; the four upstream dams give nearly absolute flood control; and downstream demands guarantee optimum summer flows. River bank lands generally are level and are either undeveloped or in agricultural uses. This portion of the river offers possibilities for large urban park sites and stream-side corridor patterns.

Demand

*Estimated demand for water-related
and nonwater-related activities
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>	<u>Nonwater-Related</u>	<u>Total</u>
1980	1,076	567	1,643
2000	1,794	942	2,736
2020	3,000	1,500	4,500

Capacity

There are a total of 851,419 acres of classified recreation land in the subbasin. This land and the resultant nonwater-related capacity by BOR Classification is shown in the following tabulation:

Classified recreation land by BOR Class, 1963

<u>Class</u>	<u>Acres</u>	<u>Nonwater-Related Capacity (Recreation-Days 1,000's)</u>
I	0	-
II	8,164	2,041
III	825,855	1,652
IV	0	-
V	17,400	17
Total		3,710

In addition, there are approximately 17,000 surface acres of water in lakes and reservoirs and nearly 1,500 miles of perennial streams. The total water-related capacity is 10 million recreation-days.

Problems

The subbasin area, outside the national forest where heaviest pressures will be felt, has not had any significant comprehensive planning programs, except for the Corps of Engineers planning on reservoir lands. Planning studies and development programs by State and local agencies are urgently needed.

Rapid changes in patterns of public use requires greater flexibility and responsiveness in planning and development than subbasin management agencies have been able to provide. Problems of both centralization and decentralization of facilities and services exist. On the 15-mile stretch of Fall Creek above the reservoir, sun-warmed water of the creek cascades down a series of 100 pools in its solid rock bed. Picnickers and swimmers scatter out the full length of the creek bottom and largely ignore the facilities above the creek banks, causing many litter and pollution problems. Similar problems develop as use by hikers and riders increases on roads and trails throughout the vast public ownership.

Problems of centralization are pressing. Heavy concentrations of recreation users hit areas of special attraction in such numbers that facilities designed for lower loads are inadequate, and conflicts between competing activities arise. At Packard Creek on Hills Creek Reservoir, the recently paved swimming beach was such an attraction that existing parking and sanitary facilities were inadequate and congestion in the area disrupted services of the nearby launching ramp. There is fear that improved access to Waldo Lake will stimulate a use which will require Class I developments in what is now essentially a primitive area.

Early drawdown results in the loss of recreation values at Fall Creek Reservoir which is potentially the finest recreation resource in the Willamette Basin Project system.

Outstanding water rights to the contents of Waldo Lake for utilitarian purposes pose a latent threat to recreation values of this largest natural lake in the basin.

Most of the riverbank lands along the Middle Fork between Dexter Dam and the confluence have been included in one of the proposed sand and gravel zones to which gravel mining would be restricted in the central Lane County region. Planning for integration of gravel mining and recreation programs is necessary to avoid destruction of one of the major recreation resources of the subbasin.

Potential

Forty-nine existing recreation areas are located in the subbasin, and 187 potential areas have been identified in agency programs. This inventory shows 559 standard picnic and camp units existing and 1,637 proposed.

Needs

Based on the previous capacity and demand calculations, the sub-basin needs and surpluses are summarized in the following tabulation:

*Summary of surplus and need for outdoor recreation 1/
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>			<u>Nonwater-Related</u>		
	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>
1980	1,076	10,000	+8,924	567	3,710	+3,143
2000	1,794	10,000	+8,204	942	3,710	+2,768
2020	3,000	10,000	+7,000	1,500	3,710	+2,210

1/ (+) indicates surplus

Goals

The following goals must be met in order to adequately manage and develop the recreation resources of the subbasin to satisfy the demands of the potential users.

1. Protect, acquire, and provide intensive developments along the Middle Fork below Dexter Dam. Because of the high quality and centrality of this resource and its present unprotected state, this goal is of greatest importance.
2. Because of its stable pool level, high water quality, and proximity to population, Dexter re-regulating reservoir should be developed to the limit of its potential.
3. Because of its proximity to population and the high quality of both land and water resources, substantial high capacity developments should be provided at Fall Creek Reservoir to make full use of early season potential before midseason releases detract from this resource.
4. Develop Class I and II land on Lookout Point and Hills Creek Reservoirs.
5. Promote development of recreation facilities by private enterprise both on the banks of the lower Middle Fork River and on public reservoir and forest lands where this pattern is appropriate.

6. Provide an adequate system of neighborhood and community parks in the urban areas.
7. Conserve recreational and scenic qualities of all water courses and scenic drives by controlling adverse influences and maintaining desirable minimum streamflows.
8. Develop a plan to preserve irreplaceable resources, both natural and man-made, which are of cultural and historical significance. Incorporate environmental quality into all projects and programs within the subbasin.

Recreation Plan

A proposed plan to achieve desired goals is outlined in the following tabulation. The plan projected would satisfy an estimated demand of 2,500,000 recreation-days.

Water-related Outdoor recreation plan, 1980-2020

<u>Name</u>	<u>Acres</u>	<u>Class</u>	<u>Recreation-Days (1,000's)</u>
Urban River Area	200	I	600
(Dexter to Springfield)	520	II	130
Dexter Reservoir	210	I	630
Fall Creek Reservoir	100	I	300
	500	II	125
Lookout Point Reservoir	20	I	60
	100	II	25
Hills Creek Reservoir	20	I	60
Waldo Lake	20	I	60
Misc. Forest Camps	2,000	II	<u>500</u>
			2,490

Preservation of Resources

To preserve recreation values in certain streams, the following minimum flows to be maintained during the recreation season are recommended:

<u>Middle Fork Subbasin</u>		<u>Recommended Flows</u> cfs
Middle Fork, Willamette River	(above Hills Creek)	300
Middle Fork, Willamette River	(above Salt Creek)	285
Middle Fork, Willamette River	(below North Fork)	1,200
Middle Fork, Willamette River	(Jasper)	1,500
Fall Creek	(below dam)	150
Fall Creek	(river mile 14.4)	125
Little Fall Creek	Mouth	80
Winberry Creek	Mouth	50
Hills Creek	(above reservoir)	70
Lost Creek	Mouth	50
North Fork of Middle Fork	(river mile 1.0)	200
North Fork of Middle Fork	Above Plateau Creek	150
Christy Creek	Mouth	100
Salmon Creek	(river mile 5.8)	175
Salt Creek	Mouth	125
Swift Creek	Mouth	80

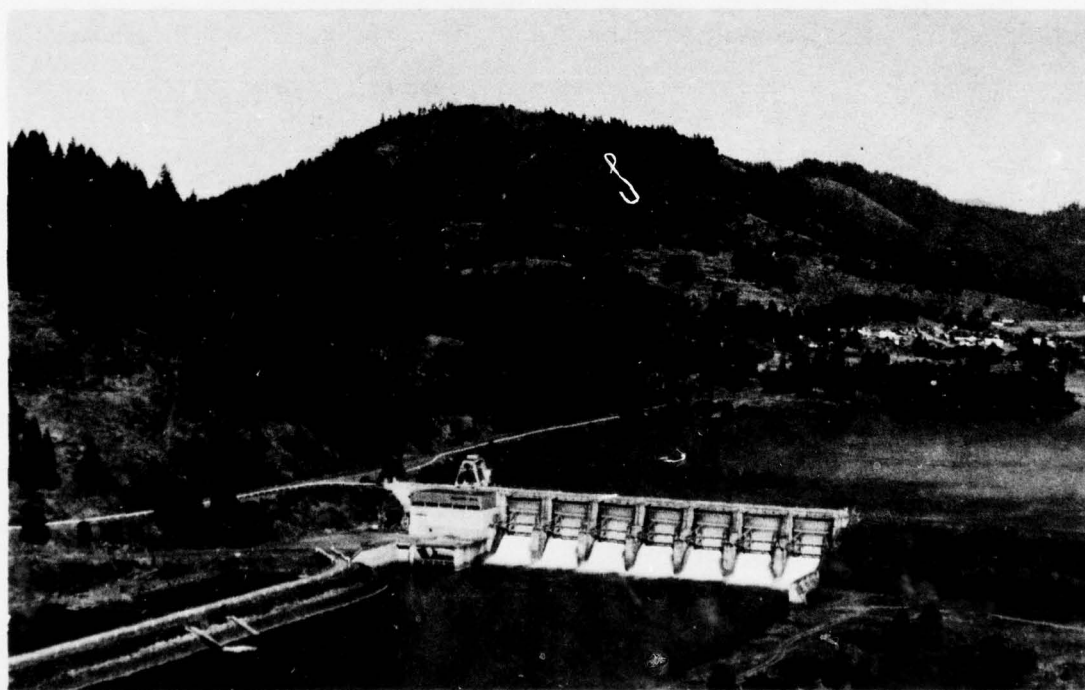


Photo A-8 Dexter Reservoir on the Middle Fork of the Willamette, 22 miles southeast of Eugene, offers recreational opportunities for boaters and fishermen. (U.S.C.E. Photo)



Photo A-9 The Middle Fork Subbasin has an abundance of outdoor recreation resources and facilities. (U.S.F.S. Photo)

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THE WILLAMETTE BASIN COMPREHENSIVE STUDY OF WATER AND RELATED L--ETC(U)
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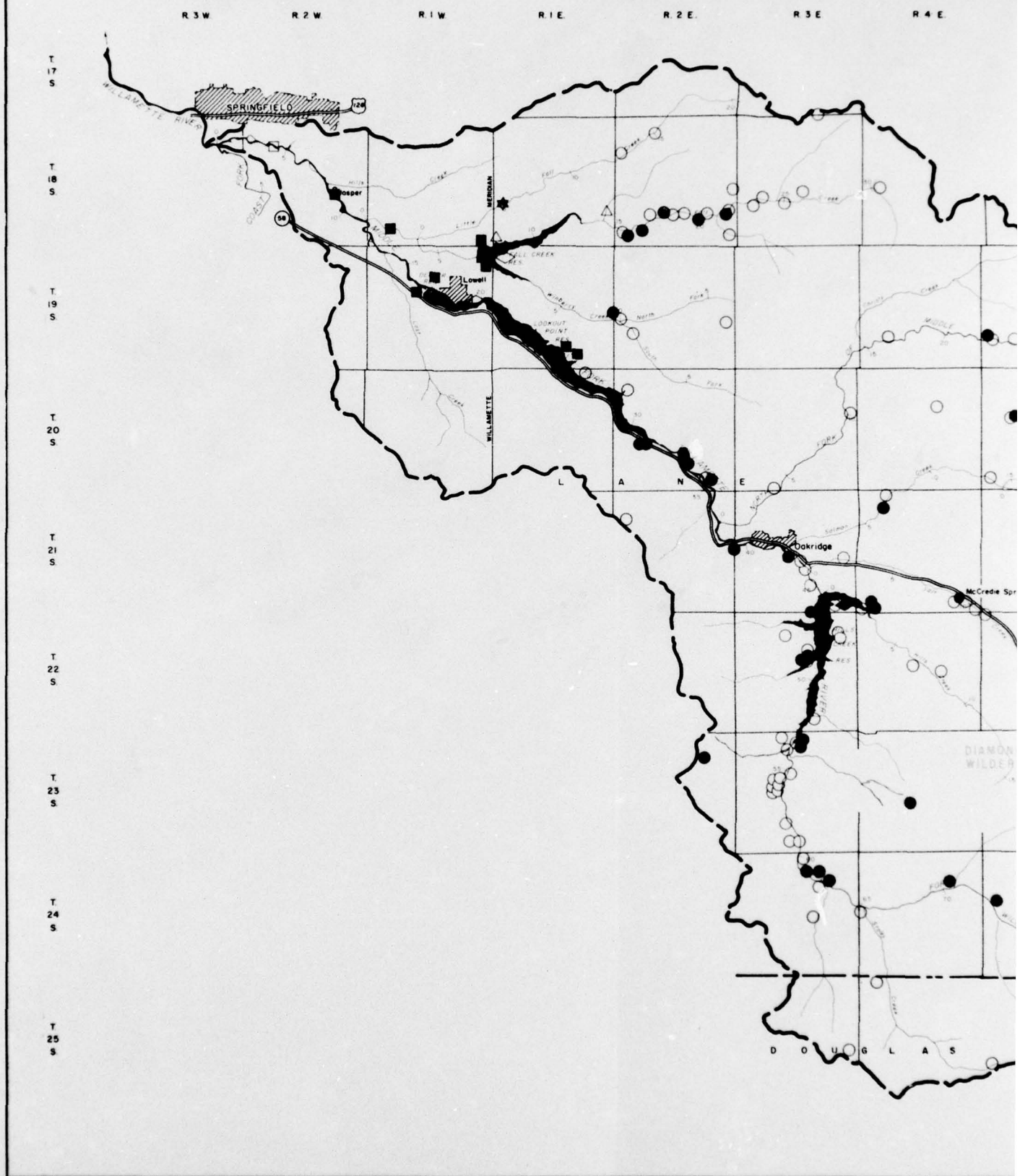
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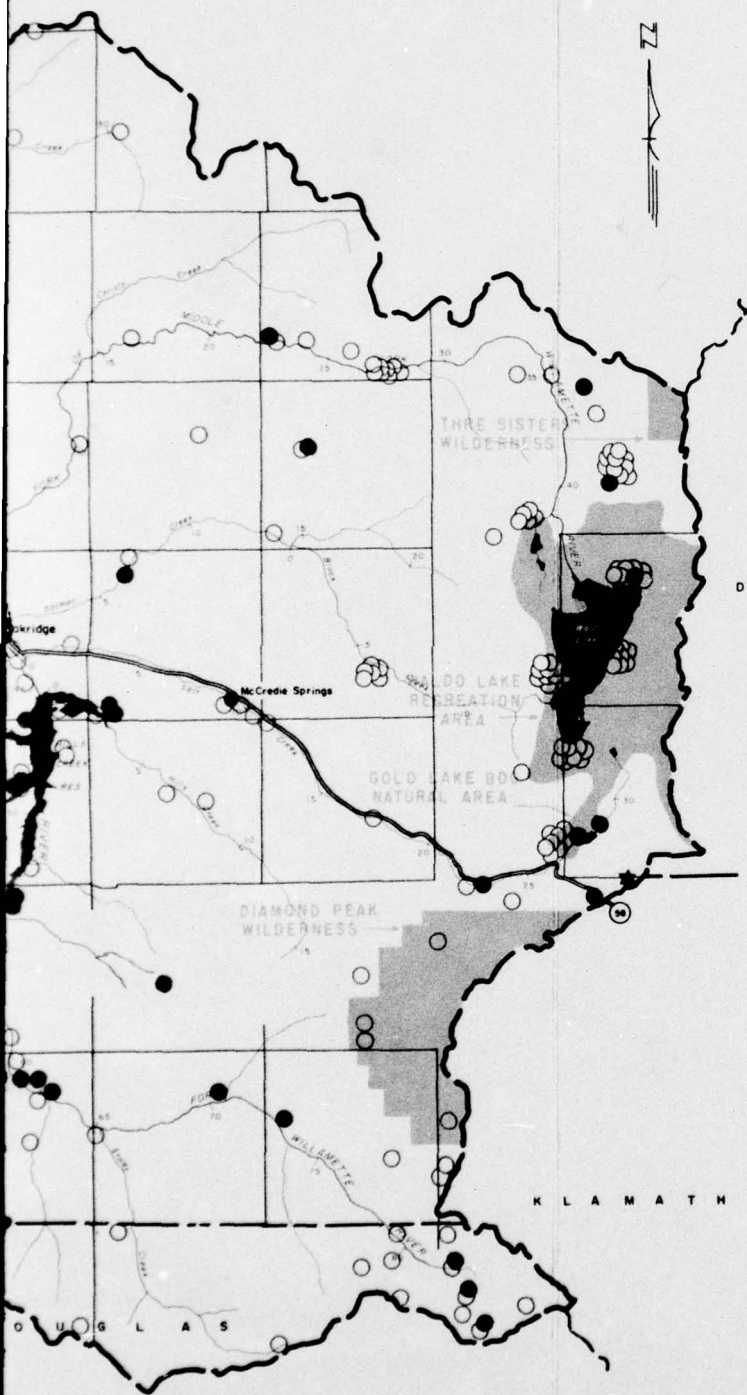
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Prepared by
WILLAMETTE BASIN TASK FORCE
of the
PACIFIC NORTHWEST RIVER BASINS COMMISSION



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D E S C H U T E S

K L A M A T H

O U G L A S

LEGEND

RECREATION SITES EXISTING POTENTIAL

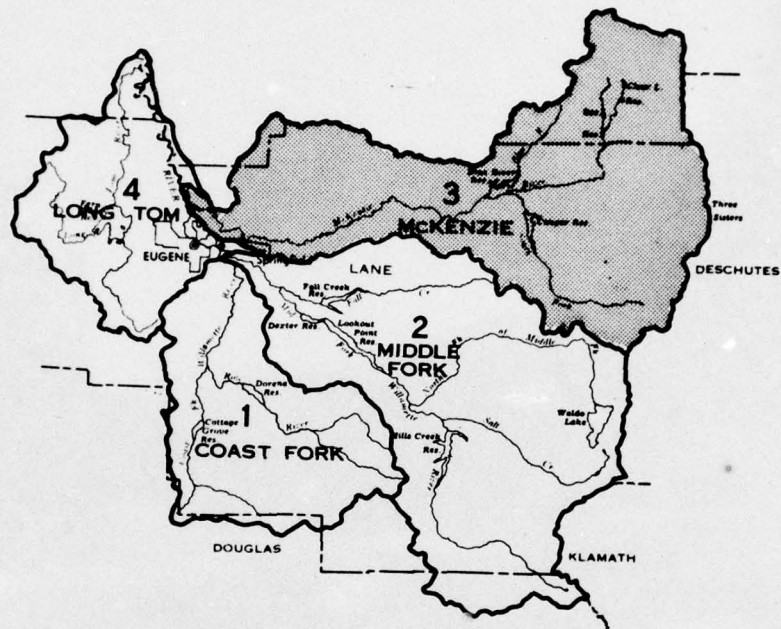
U.S. Forest Service	●	○
State of Oregon	●	○
Bureau of Land Management	▲	△
Corps of Engineers	◆	◇
City - County	■	□
Private	★	☆
Special Dedicated Areas	■	

MIDDLE FORK SUBBASIN WILLAMETTE BASIN, OREGON RECREATION SITES

APRIL 1967



SUBBASIN 3 - MCKENZIE



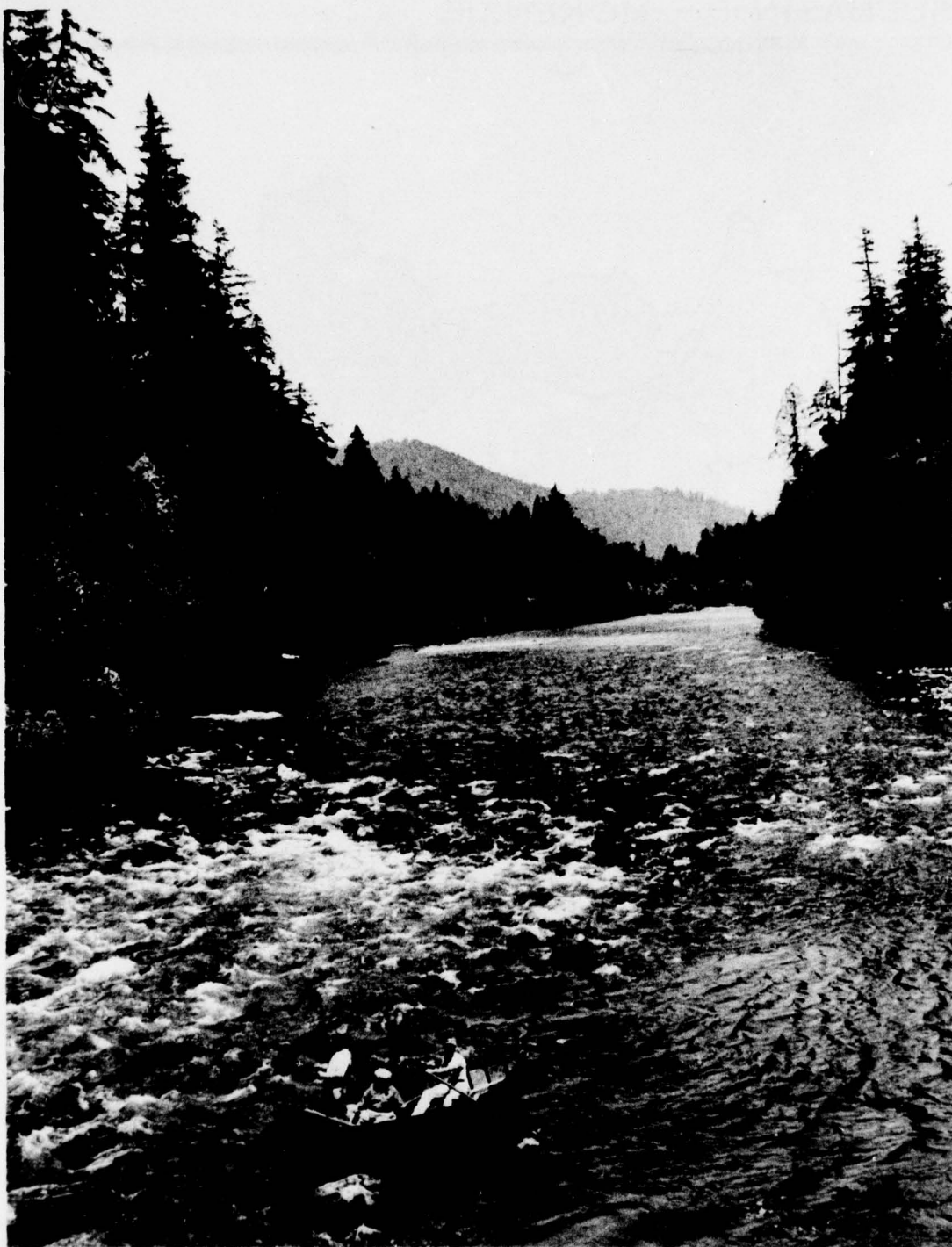


Photo A-10 The McKenzie River with its whitewater stretches, forest setting, and high water quality, is the most significant recreation feature in the McKenzie Subbasin. (O.S.H.D. Photo)

SUBBASIN 3 - MCKENZIE

Description

The McKenzie Subbasin includes a portion of the Eugene-Springfield population center. The headwaters of the subbasin are in the Cascade Range and are fed by heavy winter snowpacks and natural storage in lava beds in the headwaters. Principal tributaries of the McKenzie are Smith River, Deer Creek, Horse Creek, Blue River, South Fork, Quartz Creek, Gate Creek, Camp Creek, and the Mohawk River.

All but 270 square miles of the 1,342 square miles in the subbasin are within Lane County; the remainder is in Linn County. About 72 percent of the subbasin is forested and four percent is devoted to agriculture. The remainder is in urban developments, roads, reservoirs, alpine and nonvegetated areas such as lava flows. The Federal government administers almost 70 percent of the total land area, State and local governments less than five percent. The remainder is privately owned.

Access

U. S. 126 provides primary highway access. It follows the McKenzie River from Eugene to its upper reaches near Santiam Pass. State 242, which is now designated as a scenic drive, branches off U. S. 126 near Belknap Springs and follows Lost Creek to McKenzie Pass. A paved county road follows the Mohawk River. There are all-weather roads along Cougar Reservoir and the South Fork and another along Blue River. These routes, together with the hundreds of miles of forest roads, constitute an automobile access network throughout the subbasin. Interstate 5, which extends through the main Willamette Valley, provides a major access route through the subbasin from the north and south. U. S. 20 and 26 enter from the east. An excellent network of trails leads to the back country of the subbasin. The Pacific Crest Trail, a part of the National Scenic Trails System, extends along the crest of the Cascade Range from the Columbia River through the eastern parts of the subbasin. This trail is the major access to the high country in the Mt. Washington and Three Sisters Wildernesses.

Population and Economy

In 1960, the subbasin had a population of about 21,500, a density of 16 per square mile.

Projected population

<u>Year</u>	<u>Resident Population</u>	<u>Density Per Square Mile</u>	<u>Participating Population</u>
1980	37,900	28	35,600
2000	52,400	39	49,400
2020	75,700	56	71,100

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1980	37,900	28	35,600
2000	52,400	39	49,400
2020	75,700	56	71,100

About one-third of the population lives in Springfield. A large percentage of the remainder is concentrated in the urban fringe areas in the lower part of the subbasin in the McKenzie and Mohawk River valleys. The City of Coburg had a population of 780 in 1964 and is the only other urban area of significance. Lane County, especially the Eugene-Springfield area, was one of the fastest growing areas in the State of Oregon for the period 1960-1964. Future population is expected to be even more concentrated in the Springfield area, but the population along the McKenzie River from Vida downstream will continue to grow rapidly.

Because of the abundance of forests, timber harvesting and processing are the most important economic activities. The service activities (including tourism and recreation) and light industry are perhaps the fastest growing.

The recreational resources undoubtedly are important in attracting new industries to this area. Agriculture is limited primarily to the mouth of the McKenzie and a few areas along the Mohawk River and Camp Creek, although orchards are found along the McKenzie River. Many of the most productive agricultural lands are being lost to subdivisions, roads, and other developments. The importance of the influence of tourism and outdoor recreation on the economic structure cannot be pinpointed, but it can be demonstrated by the significant private developments located along the McKenzie River from Springfield to McKenzie Bridge. Demand for recreation-related residences has caused a recent surge in land values along the river.

Recreation Features

The most significant recreation feature of the subbasin's many attractions is the McKenzie River with its whitewater stretches, forest setting, and high water quality. Throughout its length, the river has a wide range of recreation potential. The Cascade Range that forms the eastern boundary of the subbasin contains superlative mountain scenery, interesting geologic formations, mountain lakes, glaciers, snow fields, waterfalls, and sparkling streams. The subbasin also contains substantial portions of the Three Sisters and Mt. Washington Wildernesses. In addition, there are two scenic areas, two geological areas, one natural area, and a botanical area.

The inventory of reported sites included a total of 1,530 acres of land on which there has been development. Of the 94 reported developed areas, 50 are administered by the Forest Service, six by the State park system, six by the State game department, seven by Lane County, and 25 by private operators. Most of these sites are adjacent to streams, lakes, or reservoirs.

Although only two or three miles of the Willamette River are included in the McKenzie Subbasin, this segment is important, when considering the potential of the river, since it contains many channels, islands, and sloughs. This segment is considered in the evaluation of the Willamette Recreation Waterway.

The subbasin has more than 1,000 miles of perennial streams. There are more than 100 lakes on the plateau. Surface acreage of the named lakes is over 1,500 acres. Largest are Big Lake (223 acres), Clear Lake (155 acres), and Mink Lake (153 acres). Recreation sites have been developed on Big Lake and Clear Lake. Mink Lake, within the Three Sisters Wilderness, has only minimum development. The five existing reservoirs provide about the same surface acreage as the natural lakes. All five reservoirs have recreation developments. Blue River Reservoir, now being completed, adds another 975 surface acres. Several recreation sites are being developed concurrently with the reservoir.

The classified recreation land and resulting nonwater-related capacity by BOR Classification is shown in the following tabulation:

*Classified recreation land by BOR Class
1963*

<u>Class</u>	<u>Acres</u>	<u>Nonwater-Related Capacity (Recreation-Days 1,000's)</u>
I	41	123
II	10,200	2,550
III	524,900	1,050
V	177,100	<u>177</u>
Total		3,900

Problems

The principal deterrent to maximum development of recreation resources is the lack of adequate funds at all levels of government. Fulfillment of existing recreation management plans of public agencies would greatly increase the capacity of the subbasin.

Although wilderness designation of much of the higher country assures present and future generations high quality experiences, the boundaries restrict development of much needed Class II land to a narrow strip adjacent to the scenic drive along White Branch between the Mt. Jefferson and Three Sisters Wildernesses. Areas near Campers Lake, Huckleberry Lake, and Linton Lake, all very close to the highway, are not now available for this type of development.

Present Use

The 1963 reported recreation use in the subbasin was 483,200 recreation days. About 64 percent of the visits were to Federal areas, 30 percent to State areas, and six percent to city and county areas.

Recreation-use data for the private land are not available. The major source of visitation comes from the Eugene-Springfield area. The

Demand

*Estimated demand for water-related
and nonwater-related activities
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>	<u>Nonwater-Related</u>	<u>Total</u>
1980	598	316	914
2000	911	521	1,432
2020	1,650	834	2,484

As indicated earlier, the trend toward urbanization will impose a strain on resources near and within the population concentrations. The demand for such things as playgrounds, city and county parks, and spectator events will be difficult to meet.

The demand for nonurban, nonwater-based activities, such as mountain climbing, horseback riding, and winter activities, will continue to increase as disposable income rises and as increased opportunity is provided in the subbasin.

Capacity

The recreation resource potential is abundant. The inventory of developed public recreation sites indicates that most developments have been concentrated along the McKenzie River in the central and upper subbasin. This concentration is a result of the excellent access and the preponderance of public lands. The north side of the lower 50 miles is primarily in private ownership, with motels, tourist courts, trailer parks, and cottages intermingled with small farms and orchards. The south side of the lower part of the river is largely undeveloped.

The water quality of the river is excellent throughout its length. The upper part of the subbasin is included in designated wilderness where intensive development is excluded to preserve the natural values and integrity of the fragile alpine country. Despite its close location to the urban areas, the Mohawk River valley has no developed public recreation sites on its 30-mile length. Camp Creek is similar to the Mohawk in this respect.

Steep topography around some of the existing reservoirs limits the access and development potential and, thus, the total capacity is less than optimum.

Potential

The McKenzie Subbasin has great recreation development potential. Public land managing agencies have identified about 135 potential recreation sites. Most of the potential sites are located within the Willamette National Forest. There are additional potential sites along the lower part of the McKenzie and in the Mohawk Valley. Opening areas not presently served by vehicle access will increase the number of potential sites. A rough estimate reveals an additional 3,320 acres of land with recreation potential. About 750 acres would be utilized for winter sports and about 30 acres in wilderness with minimum developments. Identified potential could provide an additional 3,000 family units capable of supporting 1.2 million camping and picnicking days annually. Many of the existing sites can be expanded to provide additional facilities.

Additional water surface acreage will become available with the completion of the Blue River Project, currently under construction, and with development of Gate Creek Project, which is authorized.

There is good potential for a system of scenic roads, trail access to points of interest, interpretations of natural features and provision for activities such as horseback riding, mountain climbing, and hiking.

There is potential for more intensive recreation development in the lower reaches of the river to serve the nearby Springfield and Coburg areas. The abundance of private lands, especially in the lower part, indicates that the private sector could also provide additional facilities, such as motels, restaurants, boat rentals, and services.

Needs

Assuming optimum development, the McKenzie Subbasin has enough land and water area to satisfy both present and future demands for outdoor recreation.

The analysis of needs does not consider the effectiveness of acreage in relation to the population. In the day-use zone of the Eugene-Springfield population center, the only available supply of water for recreation is the small Eugene Electric Water Board reservoir on the McKenzie River near Leaburg and the McKenzie and Willamette Rivers. Armitage State Park is the main public use area in this zone.

Based on the previous supply and demand calculations, the subbasin needs and surpluses are summarized in the following tabulation:

*Summary of surplus and need for outdoor recreation
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>			<u>Nonwater-Related</u>		
	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>
1980	598	2,000	+1,402	316	3,900	+3,584
2000	911	2,000	+1,089	521	3,900	+3,379
2020	1,650	2,000	+ 350	834	3,900	+3,066

1/ (+) indicates surplus

Goals

The primary goal for this subbasin should include preservation and development, in planned locations and proportions to accommodate the demand and to provide some surplus for other subbasins where shortages of opportunity occur.

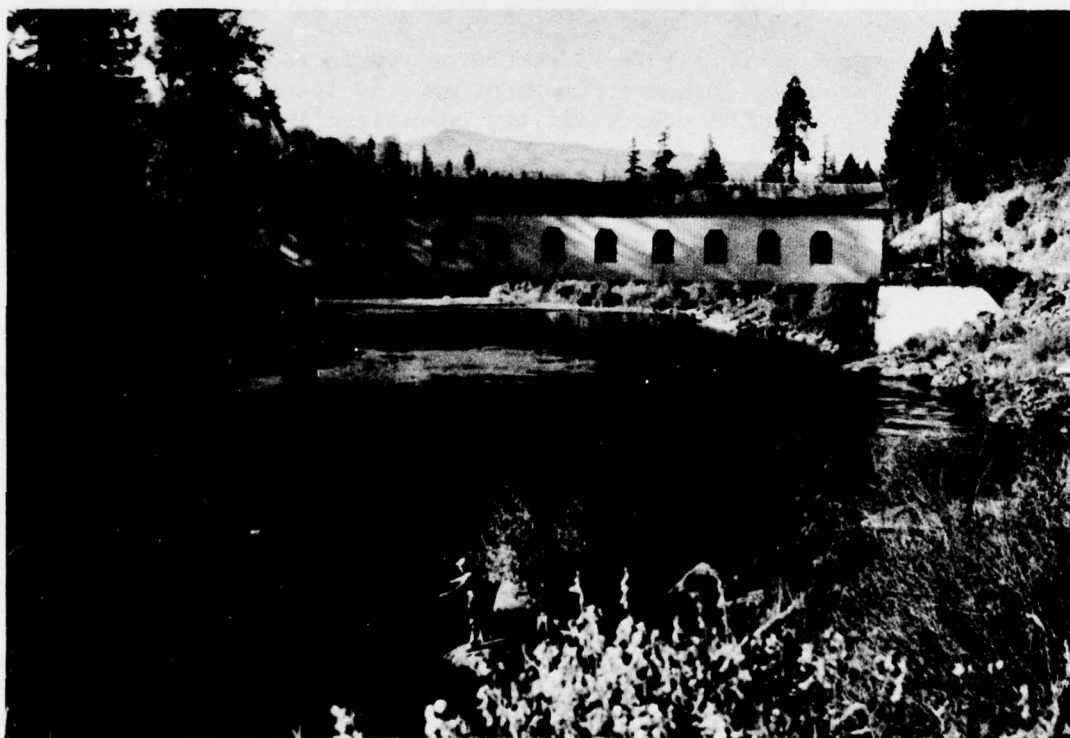


Photo A-11 Good Pasture Bridge across the McKenzie is one of many covered bridges still in use in the basin and a popular attraction for sightseers. (O.S.H.D. Photo)

Recreation Plan

Improvement of Existing Areas

As an initial step in formulating the recreation plan, consideration should be given to improvement and expansion of existing recreation sites in the subbasin. Such improvements include:

1. Better access to dedicated botanical, geologic, and scenic areas should be provided. Parking and overnight facilities should be provided at trail take-off points.
2. The trail system on the public lands should be expanded. This would include improvement of key trails and construction of a new trail along the McKenzie River and that would link the existing campgrounds and provide access for fishermen. Trails in the wilderness areas should be improved and a series of minimum development sites for hikers provided. These sites will be necessary for sanitation and protection, especially in future years.
3. The appropriate agencies should provide additional scenic drives. An important project is the completion of an all-weather road along Horse Creek to the upper reaches of the South Fork and thence to the Waldo Lake recreation area. This road would provide excellent scenery, fishing access and closer access to the Three Sisters Wilderness, Olallie Ridge Natural Area, and Lamb Butte Scenic Area.
4. Additional roads to portions of the Upper McKenzie River, which cannot now be reached, would make more sites available for camping and picnicking, such as on the west side of the McKenzie above Belknap Springs. Better vehicle access to the south side of the McKenzie in the Leaburg area could also open excellent public sites.
5. More boat access sites should be provided. The program of the State Game Commission, with 16 public boat ramps, has already made excellent progress. Many of the existing boat access sites have potential for expansion.
6. Improvement and expansion of facilities at water-based sites should be given high priority in land management programs. Such areas as Cougar Reservoir, Big Lake, Clear Lake, Smith, Trailbridge, and Eugene water board areas should be expanded to meet future needs.

Development of New Areas

Specific recreation plans for 1980, 2000, and 2020 for the McKenzie Subbasin follow.

Year 1980

In addition to the benefits of flood control, the authorized Gate Creek Project will provide an additional 600 acres of water surface in the day-use zone. Included in the authorized project are recreation facilities and additional lands based on estimated project visitation. This reservoir, located within the day-use zone of the Springfield-Eugene area, will have capacity to supply an additional 720,000 recreation days of water-related recreation use. This capacity would be reached after year 2000. The following is an estimate of the benefits that could accrue with the Gate Creek Project:

<u>Year</u>	<u>Incremental Visitation</u>	<u>Unit Day Value</u>
1980	150,000	\$1.00
2000	150,000	\$1.00
2020	20,000	\$1.00

There is a need to initiate development of identified potential recreation sites in the Mohawk Valley and along the middle McKenzie. Land management agencies need to formulate programs for the development of potential sites along the lower McKenzie in the vicinity of Springfield. The State of Oregon, through the State Highway Department (Parks and Recreation Division) and the State Game Commission, should expand and improve the existing areas to meet future needs as indicated in the Statewide Outdoor Recreation Plan. Designation of the McKenzie River as a scenic free-flowing stream should be included in such programs.

Years 2000 and 2020

To meet the demand for water-based recreation opportunity in the day-use zone will require further development of the existing resources. A project on the Mohawk River near mile 1.4 would provide additional water-surface area if selected for development. Alternatives to this site include reservoirs at other locations in the Mohawk Valley or on Camp Creek; however, they would be less desirable from the recreation standpoint because of greater distance from the population. For purposes of the recreation plan, estimates are made for a dam at river mile 1.4 with a reservoir of about 900 surface acres at normal pool and with typical operation for irrigation and flood control purposes. On this basis, the following is an estimate of the benefits for this project:

<u>Year</u>	<u>Incremental Visitation</u>	<u>Unit Day Value</u>
2000	220,000	\$1.00
2020	230,000	\$1.00

Other potential water development projects involve storage that could provide additional recreation benefits or serve as alternatives. These are listed below in priority from the standpoint of recreation.

<u>Site</u>	<u>Stream</u>
Wendling	Mill Creek
Upper Mohawk No. 1	Mohawk
Upper Mohawk No. 2	Mohawk
Upper Quartz Creek	Quartz Creek
Strube Reregulating Reservoir (authorized)	So. Fk. McKenzie

Potential sites on the McKenzie and principal tributaries above McKenzie Bridge are not listed. These streams should be retained in their present free-flowing state to provide unrestricted fish passage. Many of the sites would not enhance recreation opportunity. As in the case at Cougar Reservoir, the adjacent steep topography would preclude full utilization; therefore, such sites as Horse Creek, Twisty Creek, Rebel Creek, and Foley Ridge are not recommended in the recreation plan. All are located beyond the day-use zone of Springfield.

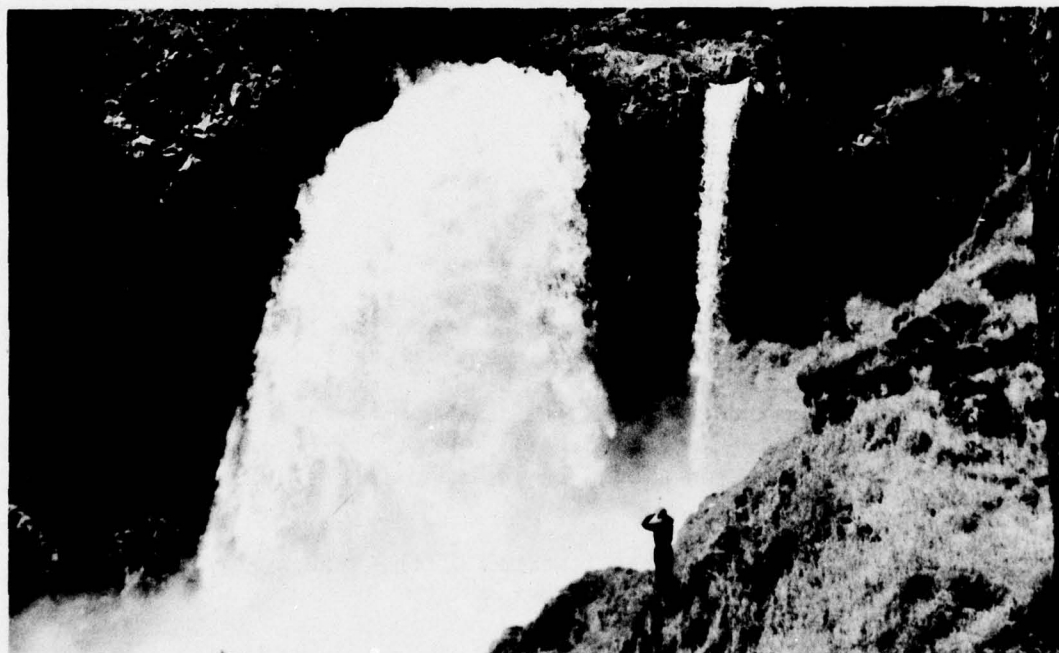


Photo A-12 Sahalie Falls dropping 75 feet over a lava cliff is a natural attraction in the McKenzie Subbasin. (O.S.H.D. Photo)

Preservation of Resources

To insure future generations of adequate resources of high quality, we must plan now for the protection and wise use of these resources. The McKenzie River should be protected from additional impoundments and preserved in a free-flowing state. The regulation of flow is important for recreation values and for effectively controlling flooding in the lower reaches. Storage projects on the tributary streams aid in recreation enhancement. Certain other streams in the subbasin also warrant being left in a free-flowing state. These include the upper South Fork, Horse Creek, White Branch, French Pete Creek, and Deer Creek. If these streams can be left unaltered, they will provide recreation benefits that will exceed any that might accrue if reservoirs were created. The suggested minimum flows during the recreation season (May - September) for some of the important streams are as follows:

<u>Stream</u>	<u>Location</u>	<u>Recommended Flow (cubic feet/second)</u>
McKenzie River	Below Trail Bridge Dam	750
McKenzie River	At McKenzie Bridge	1,200
McKenzie River	At Martin Rapids	2,000
McKenzie River	At mile 7.1	2,000
Blue River	At mile 8.5	90
Blue River	At mouth	30
Gate Creek	At mouth	80
Horse Creek	At mile 3.4	300
Lost Creek	At mouth	150
Mohawk River	At mile 1.6	200
Mohawk River	At mile 21.0	80
Mill Creek	At mouth	50
South Fork	Above reservoir	250
South Fork	Below dam	400
Roaring River	At mouth	70

Continued protection of designated wilderness, botanical, geologic, and scenic areas in addition to the existing program of landscape management is needed. The Bureau of Land Management should review lands under its jurisdiction along the McKenzie to make certain that scenic values are preserved. Many waterfalls and other features of the subbasin need protection and should be included in potential reserved areas.

A review of the historical features of the subbasin is needed prior to establishing an interpretive program.

Prepared by
WILLAMETTE BASIN TASK FORCE
 of the
PACIFIC NORTHWEST RIVER BASINS COMMISSION

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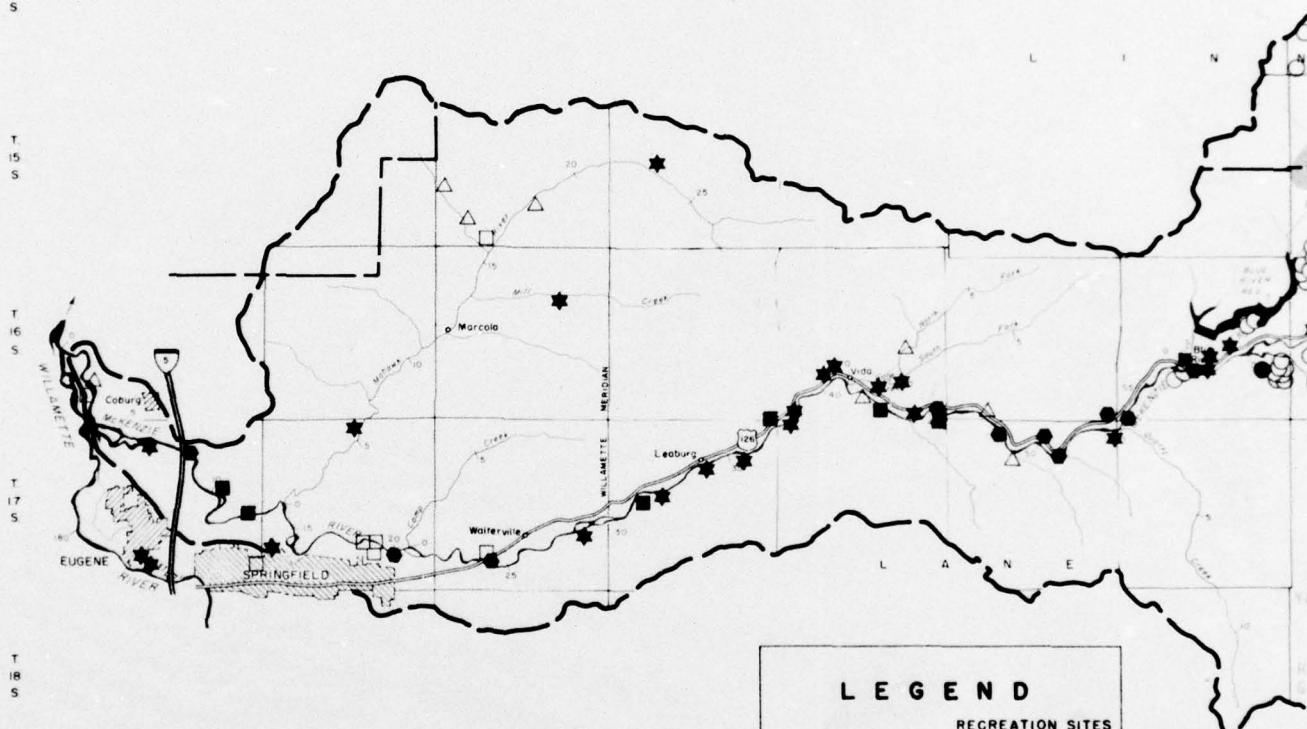
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LEGEND

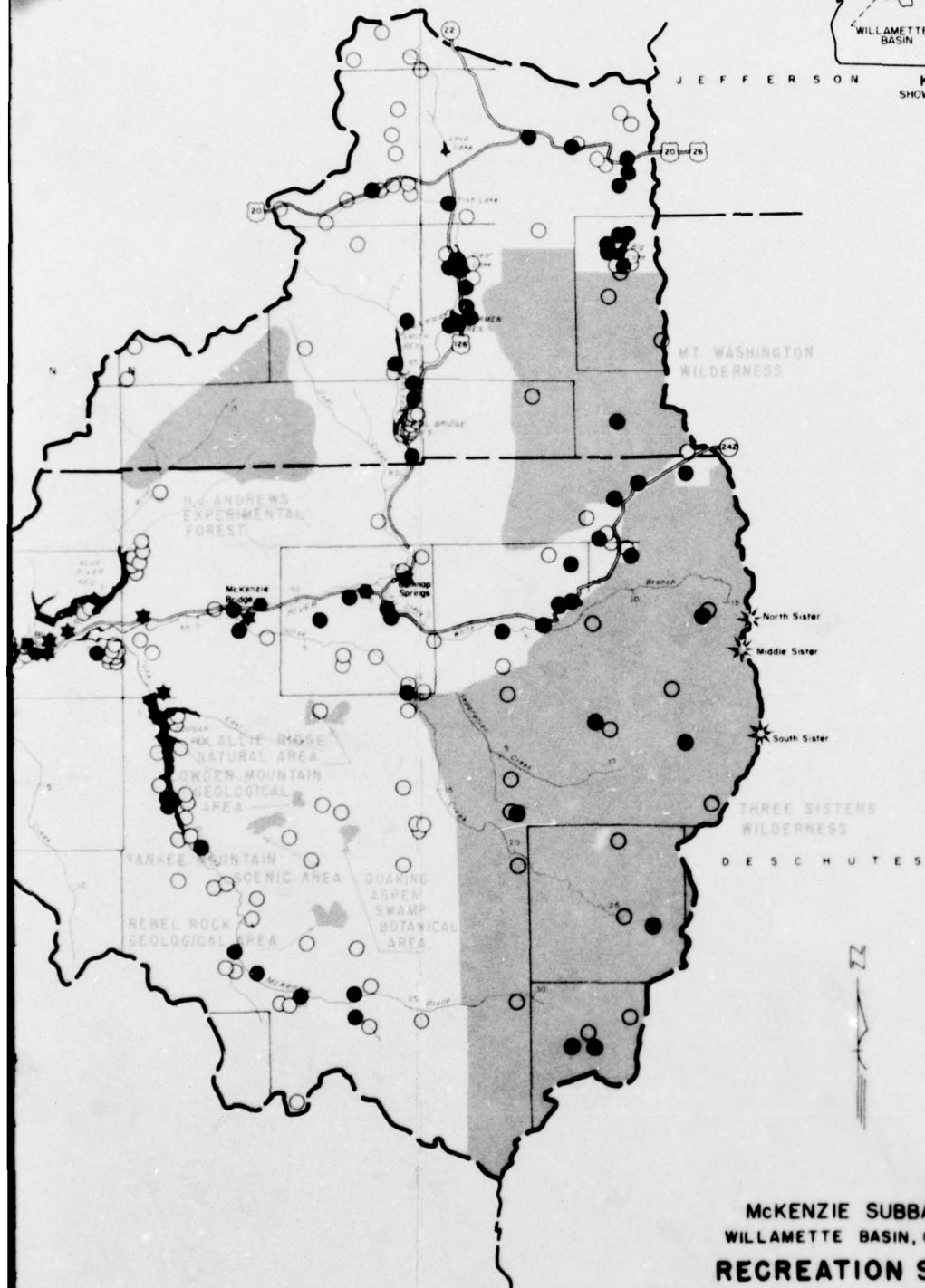
RECREATION SITES EXISTING POTENTIAL

U.S. Forest Service	●	○
State of Oregon	●	○
Bureau of Land Management	▲	△
Corps of Engineers	◆	◇
City - County	■	□
Private	★	☆
Special Dedicated Areas	■	

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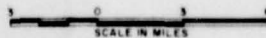


KEY MAP
SHOWING SUBBASINS



McKENZIE SUBBASIN
WILLAMETTE BASIN, OREGON
RECREATION SITES

APRIL 1967



SUBBASIN 4 - LONG TOM

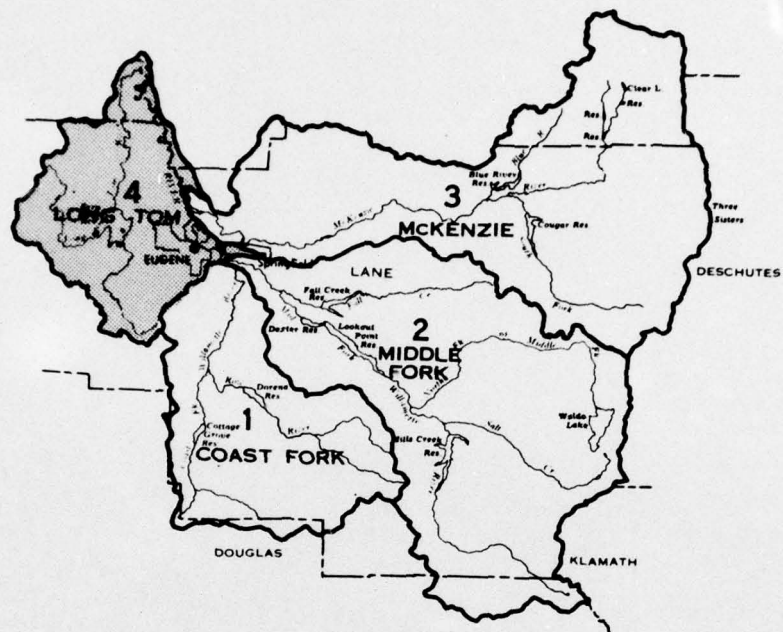




Photo A-13 Fern Ridge Reservoir which has the largest water surface area of any lake or reservoir in the basin, is ideal for water-related outdoor recreation. (U.S.C.E. Photo)

SUBBASIN 4 - LONG TOM

Description

The Long Tom Subbasin lies west of the Willamette River and includes the Eugene-Springfield metropolitan area. It is bounded on the west and south by the Coast Range. The headwaters, which include Long Tom River and Coyote Creek and their tributaries, lie on the eastern slope of the Coast Range where topography is moderately steep to gently rolling.

Nearly 90 percent of the subbasin is in Lane County; the remainder is in Benton and Linn Counties. The subbasin contains 526 square miles, of which about 47 percent is in forest and 34 percent in farmland.

Access

Paved roads provide excellent access to and within the subbasin. Interstate 5, a limited access freeway, parallels the subbasin on the east and provides a rapid transportation route from Portland to Eugene and points south. U. S. 99W traverses the eastern part from north to south. State routes 36 and 126 provide east and west access. Various secondary county roads branch off from these routes and serve the agricultural and recreational areas.

Population and Economy

In 1960, the population of the subbasin was 108,350, a density of 205 persons per square mile. The Eugene-Springfield metropolitan area is the major population center and has recently experienced tremendous growth. This trend is expected to continue.

Projected population

<u>Year</u>	<u>Resident Population</u>	<u>Density Per Square Mile</u>	<u>Participating Population</u>
1980	187,000	356	55,600
2000	258,000	490	78,400
2020	373,000	709	107,500

Agriculture, forest products, and light industry constitute the major base of employment. In 1959, the subbasin contained a total of 1,570 farms. Because of rapid urban expansion, much farmland acreage has been converted to other uses. Future economic growth will depend on expansion of established light industry, food processing, forest products, intensified agricultural development, and the tourist industry. The University of Oregon in Eugene exerts an important cultural and economic influence.

Recreation Features

The primary recreation attraction, Fern Ridge Reservoir, only nine miles from the metropolitan area, is becoming more popular each year. In addition, the forested Coast Range, interspersed with the developed farms and orchards of the Willamette Valley, has rural, scenic quality. The Willamette River is also an important recreation feature.

Present Use

Reported use of recreation facilities in the Long Tom Subbasin during 1963 was 1,808,420 recreation days. Of this total, more than 65 percent occurred on county- and city-administered recreation sites. Another 25 percent took place on State-administered areas, and the remainder on Corps of Engineers areas. More than 40 percent of the use was water related, with swimming the major attraction. Local swimming pools (in the Eugene-Springfield metropolitan area and other small towns), Fern Ridge Reservoir, and the Willamette River provide the opportunities. The subbasin's 35 miles of Willamette River frontage lack adequate public access and development except within the metropolitan area.

Demand

*Estimated demand for water-related
and nonwater-related activities
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>	<u>Nonwater-Related</u>	<u>Total</u>
1980	1,226	494	1,720
2000	2,061	828	2,889
2020	3,249	1,261	4,510

Capacity

The total reported recreation land available is 9,906 acres. The classified recreation land and resultant nonwater-related capacity by BOR Classification is shown in the following tabulation:

Classified recreation land by BOR Class, 1963

<u>Class</u>	<u>Acres</u>	<u>Nonwater-Related Capacity (Recreation-Days 1,000's)</u>
I	116	348
II	-	-
III	9,790	20
IV	-	-
Total		368

In addition to the nonwater-related capacity, there is a water-related capacity of 2,283,000 recreation-days annually.

Problems

The multiple-purpose Fern Ridge Reservoir project has many downstream water supply obligations. Irrigation, one of the project purposes, has the greatest detrimental effect on the recreation value of the reservoir. It is anticipated that future irrigation water demands on the reservoir will lower the pool elevation earlier in the season than is now the case. This will further limit recreation use. Urban expansion may engulf desirable recreation areas in the vicinity of Fern Ridge.

Recreation Potential

Fern Ridge Reservoir has about 9,000 surface acres of water and a shoreline with very good recreation land. Most of the perimeter lands are in public ownership. The Kirk Park area below the dam, including Coyote Creek channel, and the ponds created by gravel borrow areas also have potential.

The Willamette River offers opportunity for recreation on about 35 miles of channel within the subbasin. That portion within the metropolitan area is of particular importance.

The Eugene-Springfield metropolitan area has benefited from a sound land acquisition policy.

Needs

Based on the previous capacity and demand calculations, the sub-basin needs and surpluses are summarized in the following tabulation:

*Summary of surplus and need for outdoor recreation ^{1/}
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>			<u>Nonwater-Related</u>		
	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>
1980	1,226	2,283	+1,057	494	368	-126
2000	2,061	2,283	+ 222	828	368	-460
2020	3,249	2,283	- 966	1,261	368	-893

^{1/} (-) indicates need, (+) indicates surplus

Water-related capacity, at least quantitatively, is adequate through the year 2000. However, there is an immediate (1980) need for additional nonwater-related capacity. There are also both water- and nonwater-related needs in distribution and quality of supply.

Water-Related

To retain the recreation capacity, the water resource must be preserved. Streams must be kept clean and slack-water pools full during the recreation season. Fern Ridge Reservoir provides about 1,785,000 of the 2,283,000 recreation-days capacity. As downstream demands increase to necessitate stored water release during the recreation season, the capacity would be considerably less. The following tabulation shows the capacity of the reservoir at full and minimum pool.

Recreation-use capacity of Fern Ridge Reservoir

	<u>Average Recreation Season Pool Elevation (feet)</u>	<u>Approximate Surface Acres</u>	<u>Estimated Capacity (Recreation-Days 1,000's)</u>
Full	373	8,925	1,785
Minimum	353	1,480	298

There is a need for acquisition of more land. Much of Fern Ridge area is under jurisdiction of the Corps of Engineers, but the various subbasin streams also have many good shoreline lands not available for recreation use.

Nonwater-Related

The recreation capacity for nonwater-related use does not meet the estimated demand. However, facility construction could increase the capacity. For example, certain Class III land may be converted to Class I or II by the addition of facilities. Since there is an abundance of Class III land, the need is to provide facilities for greater capacity use and to acquire selected parcels and reclaim certain marsh areas not now usable.

Goals

Goals should be directed toward more development, facility construction, selected land acquisition, and resource preservation. To insure an adequate future recreation supply, pollution abatement and water storage are perhaps the most important goals.

Historical and archeological interpretation and scenic route identification are projects needing accomplishment. Effort should also be made to encourage private development of recreation areas.

Recreation Plan

Improvement of Existing Areas

Nearly all areas need some improvement or modernization. The primary need is for improved sanitary facilities, water systems, and parking areas.

Krugar, Zumwalt, and Kirk Parks at Fern Ridge should receive major emphasis, as should the parks within the cities of Eugene and Springfield, particularly along the Willamette River.

Development of New Areas

Fourteen potential recreation areas, totaling 361 acres, are reported for the cities of Eugene and Springfield. In addition, there are potential new parks on the east side of Fern Ridge, at potential reservoir sites, and along the Willamette River and major streams. The areas are not specifically identified, but preliminary investigation indicates they can accommodate facilities to meet future demands.

Certain potential reservoir projects have been reviewed for construction. These projects are listed in the following tabulation:

<u>Site</u>	<u>Stream</u>	<u>Storage (acre-feet)</u>	<u>Water Surface Acreage</u>
Unnamed	Coyote Creek	1,000 - 3,000	55 - 95
Unnamed	Fox Hollow	2,000 - 6,500	110 - 195
Coyote Creek	Coyote Creek	15,000 - 58,000	1,100 - 2,140
Unnamed	Spencer Creek	3,000 - 12,500	245 - 530
Noti (upper)	Long Tom River	12,000 - 55,000	1,380 - 2,150
Unnamed	Bear Creek	500 - 3,000	50 - 120
Unnamed	Ferguson Creek	500 - 5,000	33 - 110

The Coyote Creek and Noti sites are considered to have the greatest recreation potential, primarily before drawdown occurs. An estimate of recreation capacity for the Coyote Creek and Noti sites, based on the maximum water surface acreage, is 500,000 annual recreation-days, provided the pool elevation is maintained during half the recreation season. These two projects would not only provide recreation days at the project itself, but would benefit Fern Ridge by providing water for retaining pool level at that project.

Since site location and reservoir elevation are preliminary, no recreation capacity estimates have been made for the other sites.

Preservation of Resources

The rural and forested setting of this subbasin has important scenic value and should be preserved to retain the quality of recreation experiences. Control of industrialization and urbanization by zoning and planned development is very important and will help preserve some of the scenic resources. Each political subdivision should be encouraged to join in the development of a coordinated zoning and land use plan.

In addition, Fern Ridge Reservoir should be retained near full pool during the recreation season. Perhaps a supplemental water supply for downstream use could be created.

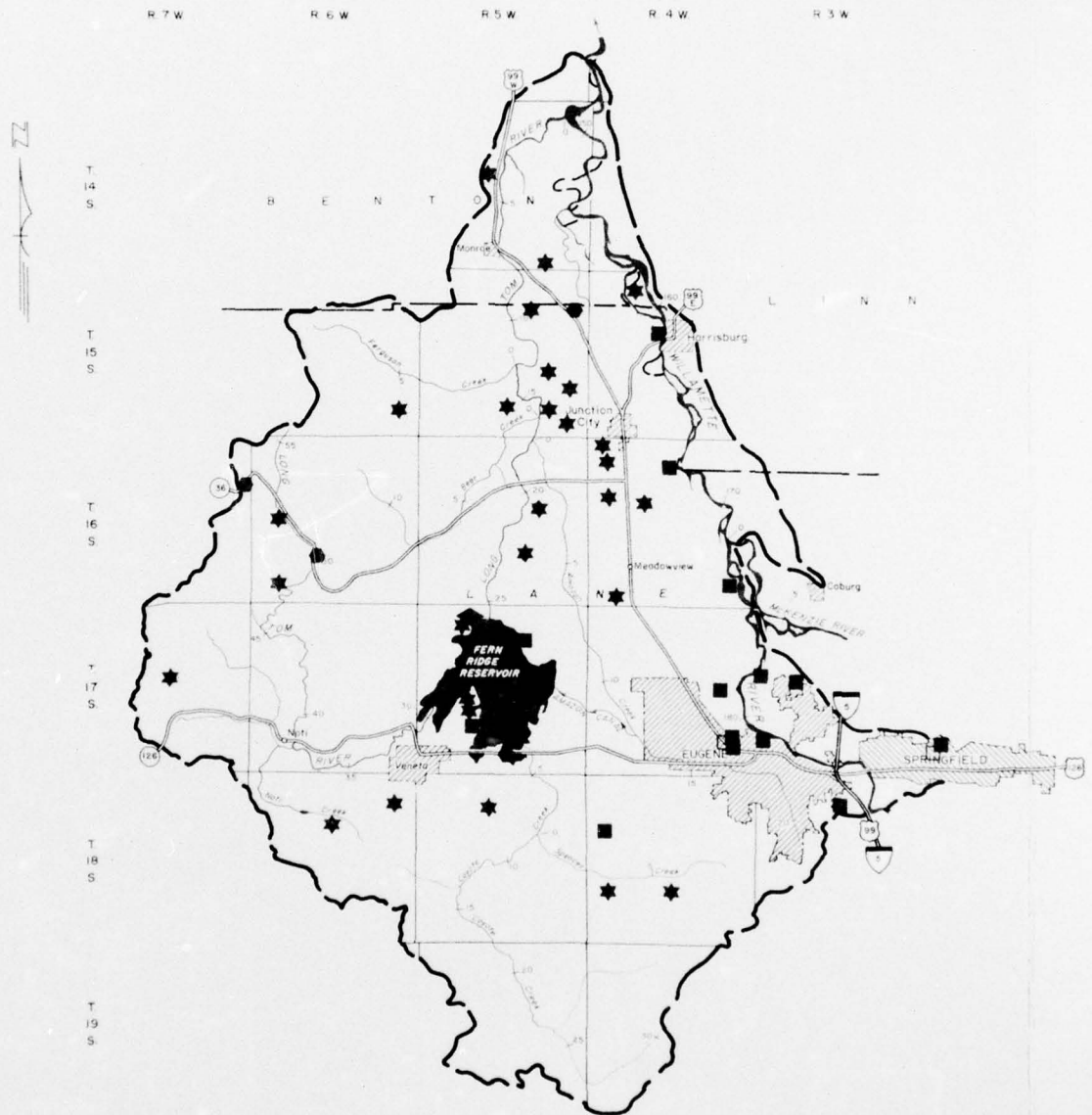
The major streams and rivers should be managed to preserve and enhance scenic values. Many streams in the Long Tom Subbasin are relatively unspoiled and enhance the scenic quality of the region. The demand for water from these streams is increasing at an accelerated rate which necessitates adoption of certain minimum flows to maintain the recreation quality of the streams. The suggested minimum flows of certain streams, which should be maintained during the recreation season, are listed in the following tabulation:

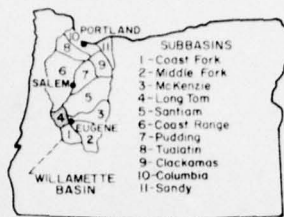
<u>Stream</u>	<u>River Mile Location</u>	<u>Recommended Flow (cubic feet/second)</u>
Long Tom River	50.0	25
Long Tom River	37.4	75
Long Tom River	25.5	30
Noti Creek	0.5	40



Photo A-14 Orchard Point Park on the east shore of Fern Ridge Reservoir provides day use facilities for water-related outdoor recreation. (U.S.C.E. Photo)

Prepared by
WILLAMETTE BASIN TASK FORCE
of the
PACIFIC NORTHWEST RIVER BASINS COMMISSION





KEY MAP
SHOWING SUBBASINS

LEGEND

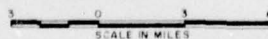
RECREATION SITES EXISTING POTENTIAL

U.S. Forest Service	●	○
State of Oregon	●	○
Bureau of Land Management	▲	△
Corps of Engineers	◆	◇
City - County	■	□
Private	★	☆

Special Dedicated Areas

LONG TOM SUBBASIN WILLAMETTE BASIN, OREGON RECREATION SITES

APRIL 1967



SUBBASIN 5 - SANTIAM

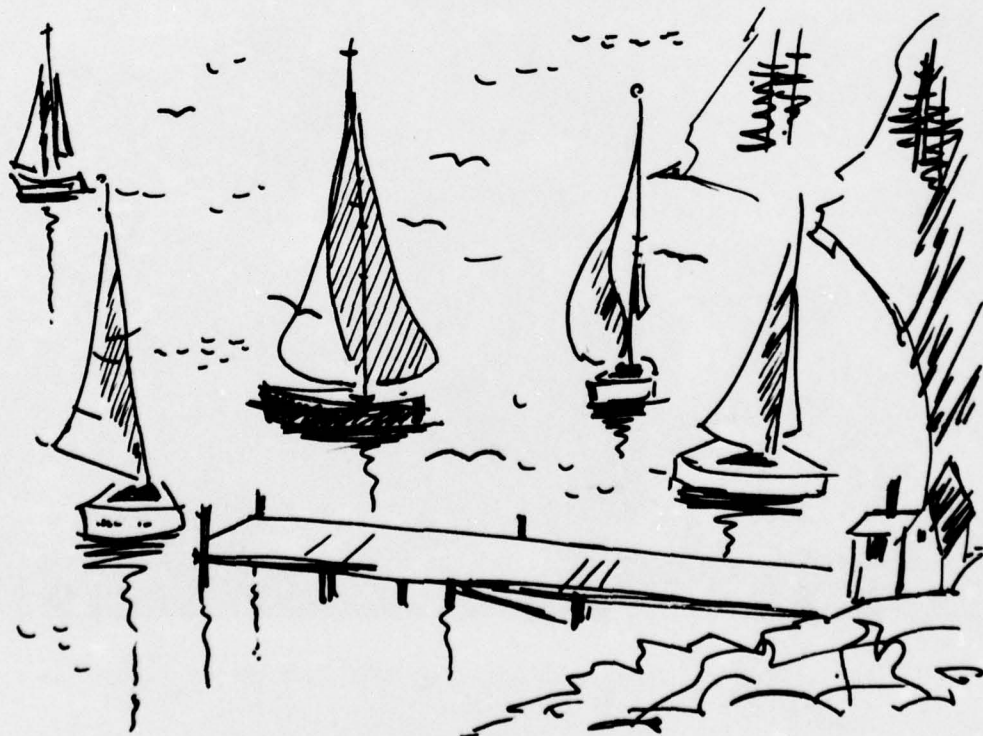
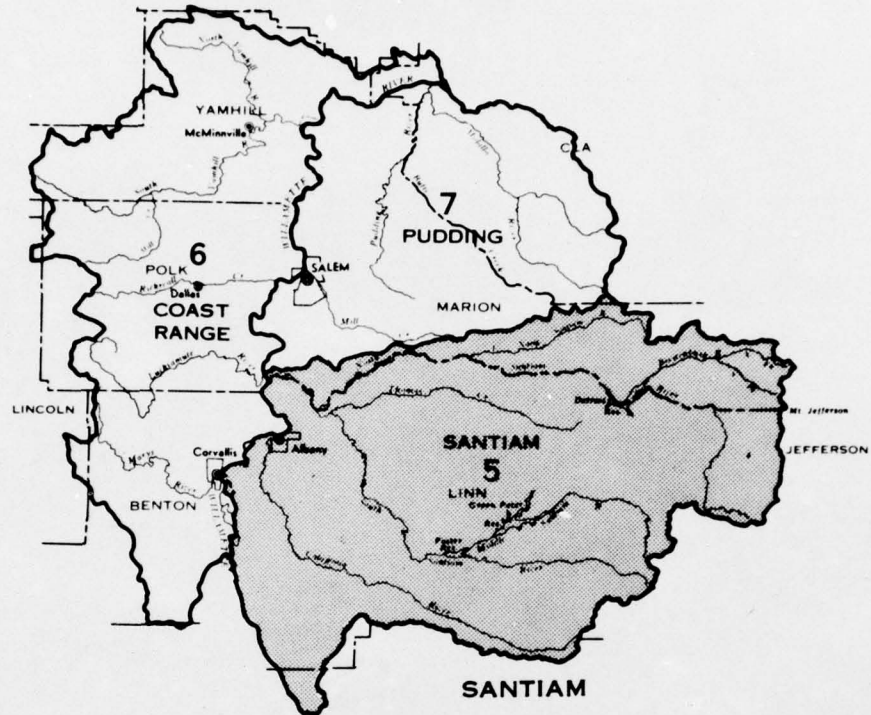




Photo A-15 Fishing along the banks of the Santiam is a popular sport for both young and old. (O.S.H.D. Photo)

SUBBASIN 5 - SANTIAM

Description

The Santiam River system, the Calapooia River and its tributaries, Muddy Creek, and approximately 38 miles of the Willamette River make up the Santiam Subbasin. The topography varies from high Cascade areas on the east to the low flat bottomlands of the Willamette Valley on the west. Most of the subbasin's 2,440 square miles are in Linn County.

The climate of the subbasin is relatively mild. Annual precipitation varies from about 41 inches at Albany to about 62 inches at Cascadia Ranger Station at a higher elevation. Most of the precipitation occurs during the winter and spring months. The summer and fall months are dry and warm with little precipitation. In the Cascades, enough snow falls for winter sports activities.

About 72 percent of the land area is forested and 24 percent is agricultural. Approximately 66 percent of the privately-owned woodland is in ownerships of 5,000 acres or more. It is significant that the large private holdings are in the forest zone, while most of the small private holdings are in the Willamette Valley.

Access

Interstate 5 traverses the area from north to south. State Highway 22, a major route to Bend and Eastern Oregon, traverses the area from west to east. State Highways 226, 34, 228 and a portion of 126 also serve the subbasin. All major routes are surfaced, and many miles of secondary roads are graveled for excellent access throughout most of the subbasin.

Much of the foothill area is private timberland, and recreation access is generally limited to certain times of the year, primarily the fall hunting season.

Most of the upper portion of the subbasin is administered by the Forest Service, and has a network of forest roads which provide good summertime access. Winter travel in the high country is limited to major highways.

Population and Economy

In 1960 the Santiam Subbasin had a population of 65,200 and an average density of 27 people per square mile.

A substantial portion of the subbasin is within the day-use zone of Salem and Eugene. Although beyond the day-use zone of Portland, it is close enough for convenient weekend use.

Projected population

<u>Year</u>	<u>Resident Population</u>	<u>Density Per Square Mile</u>	<u>Participating Population</u>
1980	105,000	43	161,400
2000	133,400	55	211,200
2020	174,900	72	289,600

Major uses of forest lands are water production, outdoor recreation, and wood fibre production. They also serve as wildlife habitat, and as areas for botanical and ecological studies.

Recreation Features

Scenery and natural resources of the subbasin are outstanding. They vary from high mountain peaks, meadows, and lakes, to large reservoirs and rolling wooded hills to the valley floor, with its slower, winding, wooded stream courses which terminate in the scenic Willamette River. About 125 natural lakes, averaging 8.5 surface acres, are located in the Cascade Range. Marion Lake, 180 feet deep and covering 325 acres, is the largest. Large reservoirs include 3,500-acre Detroit Reservoir and 100-acre Big Cliff Reservoir on the North Santiam River. Foster and Green Peter Dams, recently constructed on the South and Middle Santiam Rivers, will provide nearly 5,000 additional surface acres of water.

Sites commemorating historic events that occurred in the Santiam Subbasin are important to recreation.

Farm pond development in the Santiam Subbasin includes 14 privately developed fish ponds and two waterfowl shooting areas.

Subbasin waters support a wide variety and abundance of fish species, including salmon and steelhead. Most of the wildlife species common to Oregon are also found in the subbasin.

Present Use

In 1963, reported recreation use was 1,426,768 recreation-days. A large proportion of the visitation comes from Salem, Albany and Corvallis. Portland and Eugene also contribute many visitors to this area. Summer homes on private land in areas such as the Little North Fork of the Santiam receive heavy use.

Some recreational use of the 38 miles of Willamette River occurs now. Use is expected to increase greatly as access and facilities are provided.

Demand

*Estimated demand for water-related
and nonwater-related activities
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>	<u>Nonwater-Related</u>	<u>Total</u>
1980	2,716	1,434	4,150
2000	4,240	2,227	6,467
2020	6,721	3,396	10,117

Capacity

Most of the recreational capacity in the Santiam Subbasin is located on the wooded slopes of the Cascade Range around the many lakes, streams, and reservoirs.

The classified recreation land and resultant nonwater-related capacity by BOR classification is shown in the following tabulation:

Classified recreation land by BOR Class, 1963

<u>Class</u>	<u>Acres</u>	<u>Nonwater-Related Capacity (Recreation-Days 1,000's)</u>
I	9	27
II	14,925	3,731
III	1,016,019	2,032
V	57,520	58
VI	1	3
Total		5,851

Conversion of Class III land to Class I and II through development can increase the capacity.

The existing water resource, in subbasin lakes, ponds, reservoirs, and streams, is as follows:

Lakes and reservoirs	9,516 surface acres
Ponds, pits, reservoirs and earthen tanks	295 surface acres
Major stream mileages	
North Santiam River	92 miles
South Santiam River	66 "
Santiam River	11 "
Calapooia River	75 "
Willamette River	38 "
Total	282 miles

The portion of the Willamette River within this subbasin is discussed in the Willamette River Waterway section. Estimated water-related capacity of these resources is 7,025,000 recreation days annually.

Problems

Steep-sided reservoirs, together with seasonal pool drawdown prevent the full potential from being realized.

Lack of public access to the 38 miles of the Willamette River and to the lower Santiam and Calapooia Rivers has limited recreational use and development. Pollution of the lower Santiam River and the Willamette River has hampered recreational developments in these otherwise attractive areas. Unplanned urban sprawl detracts from the potential for recreational development in the more populated Willamette Valley areas.

Potential

These are numerous potential recreation sites located in the forested Cascade Range. Camping, picnicking, boating, fishing, and hiking are major uses being considered for these potential developments. The potential for private investment in recreational development is great along the Willamette River and lower Santiam River, on the agricultural lands, and on the private woodland areas. Private developments for profit will often be of a high-return, low-investment nature. Some of the more important private developments include fishing and hunting areas, vacation cabins and home sites near wooded streams and ponds, golf courses, youth camps, and winter and water sports areas.

Needs

Based on the previous capacity and demand calculations, the subbasin needs and surpluses are summarized in the following tabulation:

*Summary of surplus and need for outdoor recreation 1/
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>			<u>Nonwater-Related</u>		
	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>
1980	2,716	7,025	+4,309	1,434	5,851	+4,417
2000	4,240	7,025	+2,785	2,227	5,851	+3,624
2020	6,721	7,025	+ 304	3,396	5,851	+2,455

1/ (+) indicates surplus

Statistical surpluses of both water-related and nonwater-related capacity exist through 2020. However, qualitative needs and distribution of developed facilities should be considered for optimum recreational experiences.

The primary need for nonwater-related types of activity is in the lower part of the subbasin within or near the population concentrations. Responsibility for urban and suburban parks will fall on the city and county governments. There is also opportunity for private investment in high-density facilities in this zone.

Goals

Goals for subbasin recreational development are:

1. Develop some of the large acreage of Class III land to Class I and II standards.
2. Encourage private recreational developments, especially in the day-use zone of Salem and Eugene.
3. Develop additional water areas.
4. Provide sufficient development to accommodate a portion of the unsatisfied demand from other adjacent subbasins.
5. Provide public access along the rivers of the Willamette Valley.
6. Preserve irreplaceable resources of cultural, historical, and scientific significance.

Recreation Plan

When fully utilized, the nonwater-related capacity of the subbasin's land resources should supply an additional one million recreation days. The latter can be achieved by converting Class III lands to increase the available Class I lands by 200 acres and the Type II lands by 1,600 acres. The following tabulation shows the potential water storage projects which have been identified in the subbasin. These projects are listed in the priority which would best serve the recreation purposes.

Potential water-development projects

<u>Name</u>	<u>Surface Acreage</u>	<u>Adjacent Land Needs</u>	<u>Recreation- Days Potential (1000's)</u>	<u>Unit Day Value</u>
<u>1980</u>				
Cascadia 1/	1,700	3,400	850	\$1.00
Holley 1/	2,100	4,200	1,050	1.00
Sucker Creek	350	700	175	1.00
Muddy Creek	70	150	35	.90
Calapooia Tributary	100	200	50	1.00
<u>2000 or 2020 (Alternatives)</u>				
Lyons	2,000	4,000	1,000	\$1.00
Wiley Creek	1,000	2,000	500	1.00
Jordan	2,000	4,000	1,000	1.00

1/ Authorized projects

	<u>Recreation- Days (1,000's)</u>	<u>Total Recreation- Day Capacity (1,000's)</u>
Capacity of present water surface	7,025	7,025
Capacity of additional 1980 water surface	2,160	9,185
Capacity of additional 2000-2020 water surface	2,500	11,685
Calculated demand for water- related activities - year 2020	6,721	

Preservation of Resources

Water quality is an important element for recreational development, and such things as industrial pollution, high temperatures, and high turbidity decrease the potential of a body of water. In order to preserve the recreation quality of the subbasin streams, the following minimum flows during the recreation season are recommended:

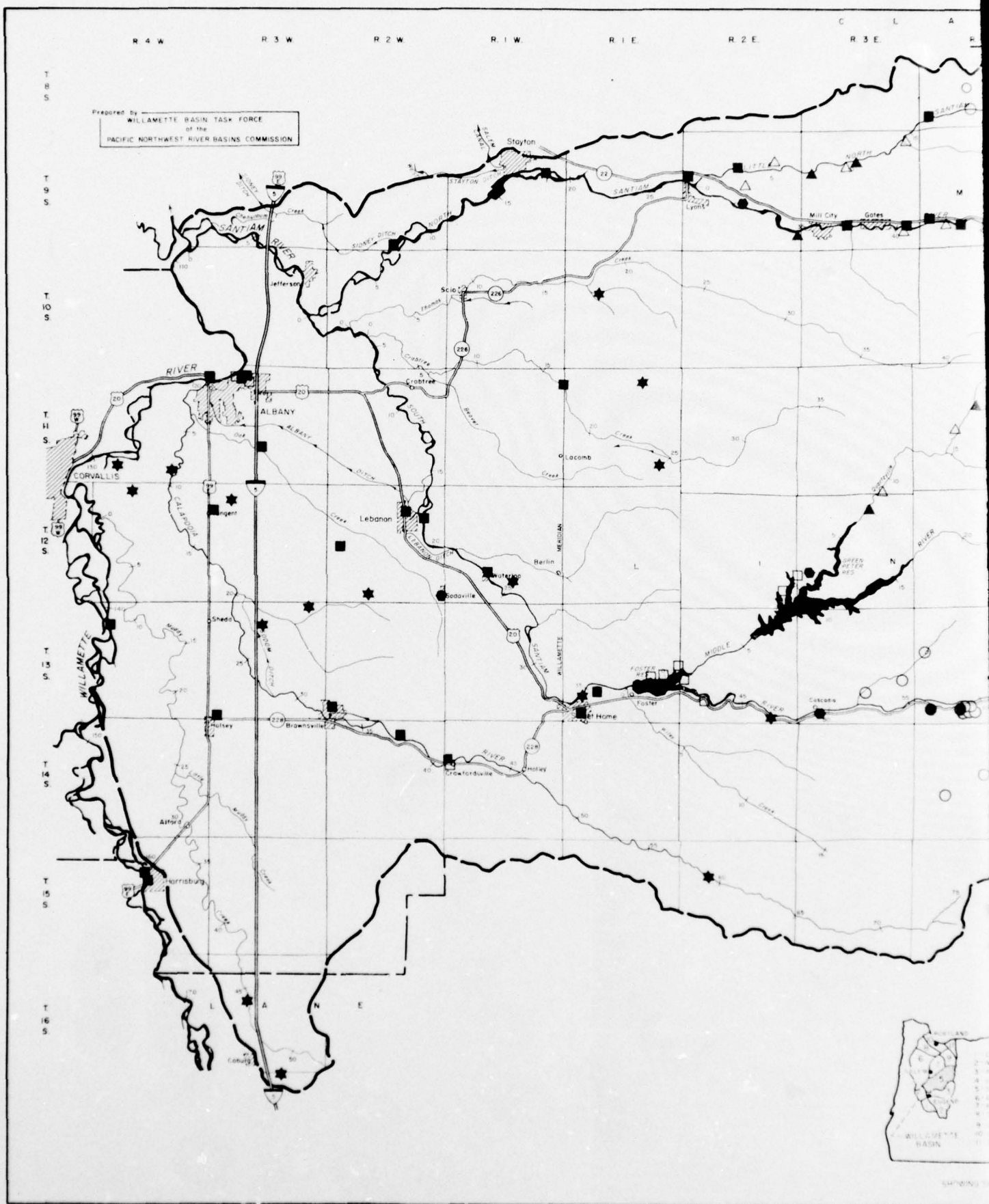
<u>Stream</u>	<u>Location</u>	<u>Recommended Flows (cubic feet/second)</u>
Calapooia River	River mile 45.5 (Holley)	160
Santiam River	Mouth	1,500
North Santiam River	Mouth	1,200
Little North Fork Santiam	Mouth	180
Rock Creek	Mouth	50
South Santiam River	River mile 23.5 (Waterloo)	500
South Santiam River	River mile 50.0 (Cascadia)	90
South Santiam River	Above Soda Fork	70
Canyon Creek	Mouth	75
Crabtree Creek	Mouth	100
Crabtree Creek	Above Roaring River	90
McDowell Creek	Mouth	45
Middle Fork, Santiam River	Above Bear Creek	100
Quartzville Creek	Above Green Peter Pool	90
Canal Creek	Mouth	60
Soda Fork	Mouth	60
Thomas Creek	Mouth	100
Thomas Creek	River mile 19.0	90
Wiley Creek	Mouth	100

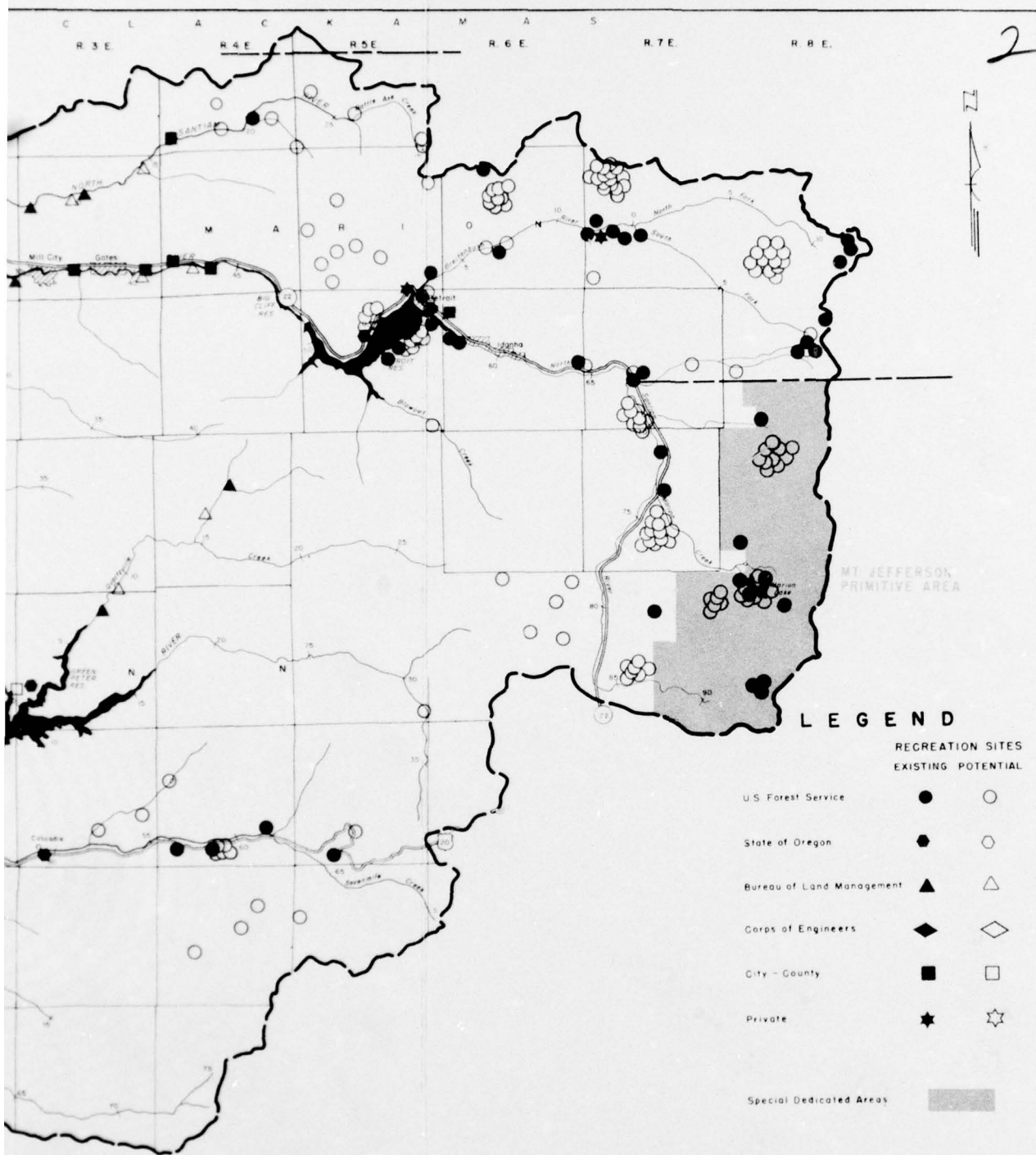


Photo A-16 Foster and Green Peter Reservoirs provide present and potential recreational opportunities in the Santiam Subbasin. (O.S.H.D. Photo)



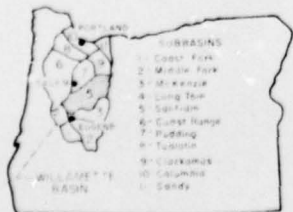
Photo A-17 Marion Lake lies just inside the newly created Mt. Jefferson Wilderness. (U.S.F.S. Photo)





LEGEND

RECREATION SITES	
EXISTING POTENTIAL	
U.S. Forest Service	● ○
State of Oregon	⬢ ⬡
Bureau of Land Management	▲ △
Corps of Engineers	◆ ◇
City - County	■ □
Private	★ ☆
Special Dedicated Areas	■



SHOWING SUBBASINS

SANTIAM SUBBASIN WILLAMETTE BASIN, OREGON RECREATION SITES

APRIL 1967







*Photo A-18 Marys Peak is the highest in the Coast Range.
Overlooking the Willamette Valley it is a favorite
picnicking site. (O.S.H.D. Photo)*

SUBBASIN 6 - COAST RANGE

Description

The Coast Range Subbasin is that portion of the Middle Subarea west of the Willamette River. It includes the portions of Benton, Polk, and Yamhill Counties east of the Coast Range, plus a small bit of Washington County. It covers 1,794 square miles. The Yamhill, Luckiamute, and Marys Rivers, and Rickreall Creek, are the four main streams. There are no major reservoirs in the subbasin; total impounded water surface is only 89 acres. The water resources include 262 miles of major streams and 113 miles of the west bank of the Willamette River. Only 31 miles are classified as mountain streams, the remainder being foothill and valley streams.

Fifty-six percent of the subbasin is forested, and about 38 percent is devoted to agriculture.

Access

All but the northwest corner of the subbasin is readily accessible by automobile. U. S. 99W and State Highway 223 provide north-south access, while east-west access is provided by State Highways 18, 20, 22, and 34. There are also many miles of paved and graveled county roads.

Public and private logging roads are usually graveled and well maintained, providing access to most of the forest area. Logging roads must be used with caution by the public because of the logging traffic. Forest roads may be closed occasionally during fire season.

Population and Economy

Population of the subbasin was 96,950 in 1960, mostly rural, with a density of 54 people per square mile. Corvallis and McMinnville are the dynamic population centers of the subbasin.

Projected population

<u>Year</u>	<u>Resident Population</u>	<u>Density Per Square Mile</u>	<u>Participating Population</u>
1980	150,700	84	151,300
2000	191,425	107	197,400
2020	251,000	140	266,600

The economy of the subbasin is primarily dependent on the forest industry which is expected to stabilize at near-current production. Future economic growth will be dependent on expansion of irrigation, agriculture, food processing, recreation, chemical, and other manufacturing. Growth of Corvallis is related to the presence of Oregon State University.

Recreation Features

The forest land is the primary recreation asset of this subbasin. In addition to the natural beauty of the forest, fish and wildlife attracts many hunters and fishermen. Nearly 117,000 forest acres of the subbasin are in public ownership; 530,000 acres are in private holdings.

Stream lengths and gradients in the subbasin are shown in the following tabulation:

Stream lengths and gradients

<u>Stream</u>	<u>Total Length Miles</u>	<u>Mountain</u>		<u>Foothill</u>		<u>Valley</u>	
		<u>Length Miles</u>	<u>Average Gradient Feet/Mile</u>	<u>Length Miles</u>	<u>Average Gradient Feet/Mile</u>	<u>Length Miles</u>	<u>Average Gradient Feet/Mile</u>
Marys River	40	-	-	23	14	17	6
Little Luckiamute	26	8	260	18	37	-	-
Luckiamute	58	5	340	9	56	44	5
Rickreall Creek	32	4	490	14	55	14	11
S. Yamhill River	62	-	-	-	-	62	8
N. Yamhill River	33	3	533	11	57	19	5
Yamhill River	<u>11</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>11</u>	<u>1</u>
Total	262	20		75		167	

The portion of Willamette River in this subbasin is discussed in the Willamette River Waterway section. No lakes in the subbasin are important for public recreational use.

Present Use

Reported use of recreation facilities in the Coast Range Subbasin in 1963 was 4,320,100 visitor-days. City and county parks supply most of the recreation opportunity. About 30 percent of the use was water-related, with swimming the main activity. The subbasin's 113 miles of frontage on the Willamette River is largely inaccessible for recreational use. Local swimming pools in the larger cities provide the majority of opportunities for recreation swimming.

Demand

The calculated demand, including that of nonresidents, expressed in recreation-days and separated as to water-related and nonwater-related demand, follows:

*Estimated demand for water-related
and nonwater-related activities
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>	<u>Nonwater-Related</u>	<u>Total</u>
1980	3,358	1,770	5,128
2000	5,286	2,777	8,063
2020	8,250	3,471	11,721

Capacity

The existing supply of developed recreation land totals 11,847 acres. Of this, 7,852 acres are in private development. There are 2,125 acres of city-county parks, 1,830 acres in State parks, and 40 acres in Federal facilities.

Over 430,000 acres in this subbasin have been identified as having value for recreational use and development. Distribution of this land and the resultant nonwater-related capacity by BOR Classification is shown in the following tabulation:

Classified recreation land by BOR Class, 1963

<u>Class</u>	<u>Acres</u>	<u>Nonwater-Related Capacity (Recreation-Days 1,000's)</u>
I	1,747	5,241
II	2,820	705
III	427,491	855
IV	44	4
VI	15	45
Total		6,850

Many of the potential development sites on Class II land are under the jurisdiction of the Bureau of Land Management. Nearly two-thirds of the land in the Class III category suitable for extensive recreational use are private forest lands. Little or no development is needed on this land other than roads or trails to permit enjoyment of the natural environment through hunting, fishing, hiking, berry picking, and sightseeing. Federally administered lands are capable of supplying extensive opportunity for similar activities.

Although facilities are available to satisfy much of the overall present recreation demand, there is an obvious deficiency in the supply for water-related recreation.

Private lands are supporting the major share of the recreation load in hunting, fishing, golfing, and other activities common to private investment. A survey made by Oregon State University (Special Report 173, April 1964) shows that private facilities in western Oregon are not fully utilized. Thirty-nine percent of those surveyed stated financial returns were limited because of lack of customers.

The fishing and hunting activities on private land are generally in private clubs with limited membership. There is opportunity for expansion of private fish ponds in Benton and Polk Counties because fishing in most Coast Range streams is limited by extremely low summer flows. Because of low financial return, private recreation endeavor is doing little to satisfy recreation activities such as swimming, boating, and camping.

The only unique or natural area identified in this subbasin is a State wayside containing an unusual rock formation between McMinnville and Sheridan. There is also a 15-acre historic site.

Problems

The topographic features of the subbasin and the resultant development pattern of the road systems make recreation use of certain portions of the subbasin difficult. Interstate 5, the main north-south access through Willamette Basin, runs east of the Willamette River and therefore provides few access points into the Coast Range Subbasin. East-west access in the middle of the subbasin is quite limited; and therefore, this area receives little use other than by local residents. Because of restricted access to the outside, the southern part of the subbasin also receives mostly local use.

Only five small public-access areas exist on the 113-mile Willamette River frontage. Public roads avoid the river, giving the public little opportunity to enjoy its scenic qualities. Most of the private roads leading toward the river, and the private lands on the river, are closed to public use. For this reason, the river satisfies very little of the existing recreation demand. Restrictions on use of city watershed lands has prevented optimum recreational development and use of a substantial attractive area.

The lack of outstanding natural features has resulted in little development of overnight facilities. Only one State park and one national forest area offer facilities for overnight camping, and these are of very limited capacity.

Potential

Good opportunities for development of recreation facilities occur on the Willamette River and the other large streams. The proposed Bureau of Reclamation reservoir on Mill Creek would provide the first intensively developed water-based recreation in the subbasin. Other potential reservoir sites are available. Construction of a number of these would accelerate development of a recreation-based industry to complement the subbasin's economic base now limited to agriculture and forestry.

Marys Peak in the Siuslaw National Forest provides an outstanding scenic drive from nearby Albany, Corvallis, and Philomath. There is potential for more intensive development of the area. There are only a few signs on the many branch roads, and directional signs are needed.

The Bureau of Land Management administers 66 miles of stream frontage in this subbasin, much of it suitable for intensive recreational development. They have identified nine potential recreation sites for future development which include 900 acres of land.

The orchards, nursery farms, stock farms, dairies, row crops, and hayfields present a kaleidoscope of rural landscapes for the pleasure driver. The forested backdrop of the Coast Range adds to the beauty. Main travel routes miss the more picturesque byways. There is potential to identify selected State or county roads as scenic drives and give them publicity; the river road from Wilsonville to Newberg is an example.

Needs

Based on the previous capacity and demand calculations, the subbasin needs and surpluses are summarized in the following tabulation:

*Summary of surplus and need for outdoor recreation 1/
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>			<u>Nonwater-Related</u>		
	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>
1980	3,358	0	-3,358	1,770	6,850	+5,080
2000	5,286	0	-5,286	2,777	6,850	+4,073
2020	8,250	0	-8,250	3,471	6,850	+3,379

1/ (-) indicates need, (+) indicates surplus

Virtually no developed water-related recreation land is available in the subbasin. Therefore, the most pressing need in the area is the development of water-related resources. The Willamette River Parks system program will satisfy part of the need.

Improved road access to streams is needed to permit better distribution of fishing use. Several of the proposed reservoir projects are needed to satisfy demand for fishing, swimming, water skiing, and boating. Because of the size and population distribution of the subbasin, reservoir projects need to be well dispersed.

There are no statistical needs in the subbasin for nonwater-related demand. However, the method of calculation is based on land capacities rather than facility capacity. There is a significant shortage of recreation facilities within the subbasin. A primary need is the development of more Class II land, and creation of public access areas on the Willamette River.

Goals

The following goals have been developed for the Coast Range Subbasin:

1. Begin immediately to provide access and facilities on the Willamette River and to control pollution of the river.
2. Develop swimming pools in all communities to help satisfy the swimming demand.
3. Develop and publicize scenic drives. Such roads should incorporate interpretive devices, such as signs and historical markers.
4. Federal and State governments should develop more forest land and provide additional recreation facilities.
5. Immediate emphasis should be given to the development of Class II land.

Recreation Plan

Improvement of Existing Areas

The Marys Peak area of the Siuslaw National Forest is a prime area for expansion of both day and overnight facilities. Two State parks, Helmick and Ellmaker, receive only moderate use. Both are day-use areas and can be expanded to satisfy additional demands. Access to the river at Helmick should be improved. Boat-launching facilities are needed at the Wilsonville ferry site, the Wheatland ferry site, and at Buena Vista.

Development of New Areas

Federal agencies are investigating a number of sites for reservoir construction which would serve multipurpose objectives of irrigation, flood control, municipal, and industrial water, fish and wildlife, and recreation. Evaluation of potential reservoirs for meeting current and projected recreation needs follows:

Red Prairie Reclamation Project on Mill Creek

This project will provide 563 acres of water surface and make possible 67,000 recreation days of use. The project will serve the urban areas of Portland, Salem, and McMinnville. Annual monetary recreation benefit is estimated at 90 cents per recreation day, exclusive of fishing. Road access is excellent. The project is located only 2.6 miles by county road from State Highway 22.

Agency Reservoir on South Yamhill River

Because of its location, this reservoir has recreation potential. It will be adjacent to State Highway 18, with direct access from Portland. State Highway 22 provides access from Salem and Dallas. Average reservoir surface area of 3,550 acres can provide 386,000 recreation days use with proper development. Annual recreation benefits amounting to \$1.00 per recreation day are expected. Seven thousand one-hundred acres of adjacent land will be needed to accommodate the recreation facilities and landscape management. Location on a heavily traveled State highway, plus the large size of the project, indicate the desirability of recreation management by either State or local government.

Pike Reservoir on North Yamhill River

This proposed 1,300-acre reservoir can provide 650,000 annual recreation-days of use if properly developed. It is accessible by State Highway 240 and then five miles of county road. Proximity to Portland makes it especially desirable as a recreation site. Annual monetary benefits from recreation are expected to be 80 cents per recreation day.

Ritner Creek Reservoir

Construction of a modest size reservoir on Ritner Creek would provide slack-water recreation to the Albany-Monmouth-Corvallis area. The proposed 390-acre reservoir could provide 195,000 days of recreation use at \$1.00 per day in an area where no such opportunity now exists. This facility would fit well into Polk County's park program.

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Reese Creek Reservoir

This small reservoir of 300 acres on Reese Creek has potential for 150,000 days recreation use. It is in the south end of the Coast Range Subbasin where slack-water recreation is non-existent. The reservoir would be in an attractive wooded setting and is readily accessible by U. S. 99W and a few miles of county road. Annual recreation benefits are expected to be \$1.00 per recreation-day. In view of the modest size of the project, a local government agency would be the logical administrator.

Construction of these five reservoirs will result in good dispersion of water impoundments throughout the subbasin. This will give the subbasin a total of 6,192 surface acres of slack water. Development of these projects and the Willamette River should provide sufficient supply to meet the needs through 1980.

Considerably more slack-water surface must be developed if demand is to be met after 1980. In addition to the public projects, small private lakes or ponds for commercial recreation use will be needed.

The next two tabulations show various water storage projects which could be developed to help satisfy needs in 2000 and 2020. These projects are located throughout the subbasin to give proper distribution of the water resource. The projects are listed in order of priority for recreation purposes.

Alternative projects to meet needs in 2000

<u>Project Name</u>	<u>Surface Acres Water</u>	<u>Acres Recreation Land</u>	<u>Potential Recreation- Days Use</u>	<u>Unit Day Value</u>
Buck Hollow	1,500	3,000	300,300	\$1.00
Moore's Valley	1,000	2,000	246,000	1.00
Deer Creek	1,100	2,200	300,300	1.00
Cascade	240	480	120,000	1.00
Carlton Lake	250	500	50,000	.90
Rock Creek	150	300	75,000	1.00
Teal Creek	360	720	180,000	1.00
Palmer Creek	840	1,680	420,000	1.00
Vincent Creek	320	640	160,000	1.00
Total	5,760	11,520	1,851,600	

Alternative projects to meet needs in 2020

<u>Project Name</u>	<u>Surface Acres- Water</u>	<u>Acres Recreation Land</u>	<u>Potential Recreation- Days Use</u>	<u>Unit Day Value</u>
Lower Fairdale	1,790	3,580	895,000	\$1.00
Cosper Creek	200	400	100,000	1.00
Rickreall Creek	550	1,100	275,000	1.00
Maxfield Creek	150	300	75,000	1.00
Hess Creek	80	160	40,000	1.00
Muddy Creek	240	480	120,000	1.00
Rowell Creek	230	460	115,000	1.00
Rogue River	140	280	70,000	1.00
Horton Creek	140	280	70,000	1.00
Chehalem	90	180	45,000	1.00
Salt Creek	1,070	2,140	535,000	1.00
Ballston	120	240	60,000	1.00
Little Luckiamute	260	520	130,000	1.00
E. Fork Willamina	250	500	125,000	1.00
Ash Creek	115	230	57,500	1.00
Gold Creek	175	350	87,500	1.00
Coast Creek	250	500	125,000	1.00
Chehalem	90	180	45,000	1.00
Tindle Creek	200	400	100,000	1.00
Jont Creek	120	240	60,000	1.00
Price Creek	70	140	35,000	1.00
Total	6,330	12,660	3,165,000	

Construction of these projects would place impoundments on nearly all important streams in this subbasin except the Luckiamute River, Upper Rickreall Creek, and Marys River. Because of their recreational, scenic, and fishery values, the latter two streams should be maintained in a free-flowing condition.

Development of facilities for nonwater-related activities is also needed to meet existing and future demands. However, certain activities cannot be satisfied within the subbasin. There are no opportunities for mountain climbing in this subbasin. Marys Peak area is the only mountain offering opportunity for skiing, but snow is usually not of sufficient depth or duration to justify the expense of ski lifts or elaborate development. In general, demand for these uses must be satisfied outside the subbasin.

Class II developments are most needed to provide general outdoor recreation use. Private and commercial recreation development is needed; and Federal and State governments should accelerate programming and construction.

Initial recommended projects on Federal lands are listed as follows:

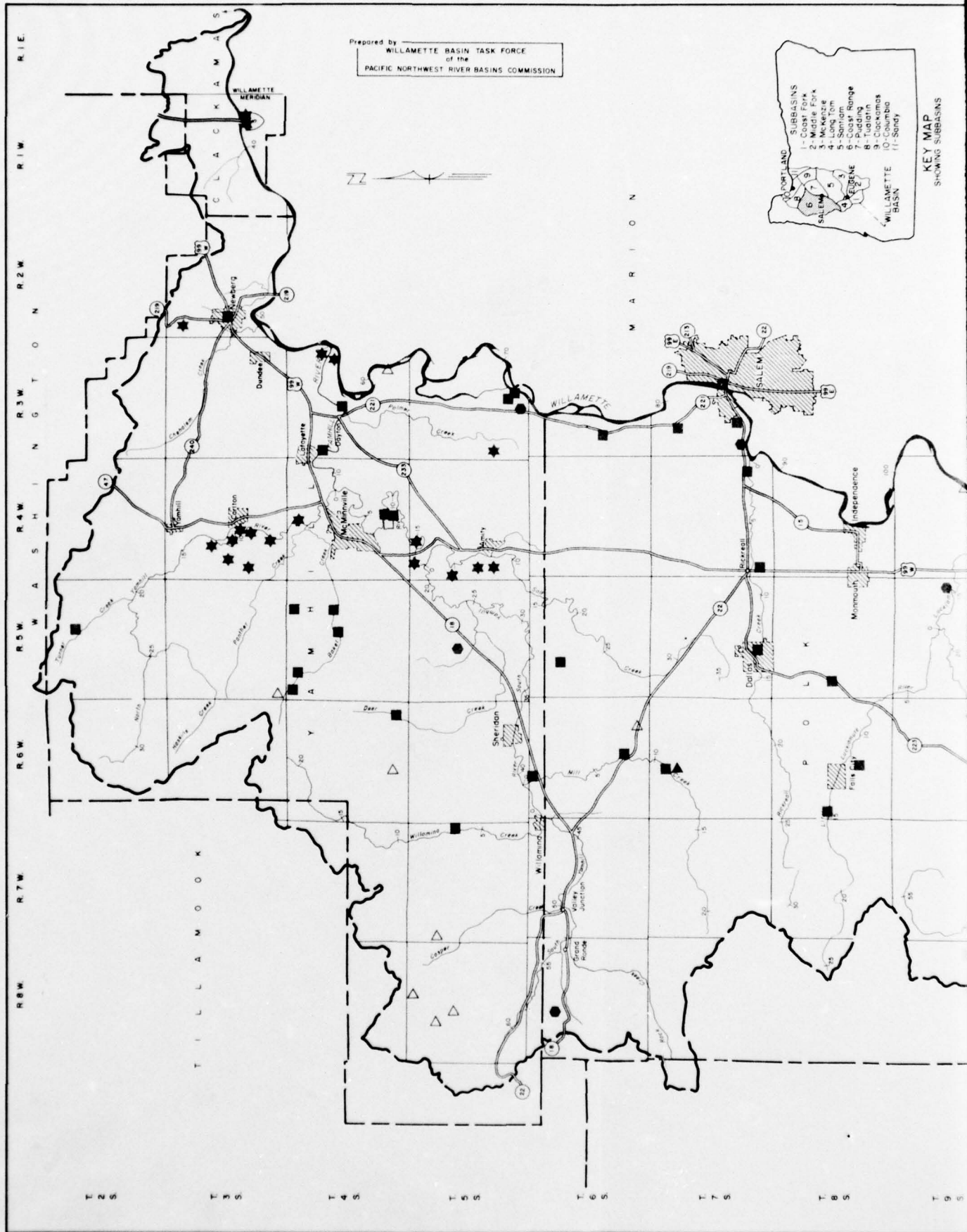
<u>Name of Area and Drainage</u>	<u>Type Development</u>	<u>Acreage</u>
Marys Peak	Campgrounds and picnic area	80
Alderview - Agency Creek	Campground	80
Agency Creek - Agency Creek	Campground	150
Baker Creek - Agency Creek	Campground	40
East Willamina on East Fork Willamina Creek	Picnicking	80
Yoncalla - Yoncalla Creek	Picnicking	80
Coast Creek - Coast Creek	Camping	320
Bald Mountain	Camp and picnic area	2
	Total	832

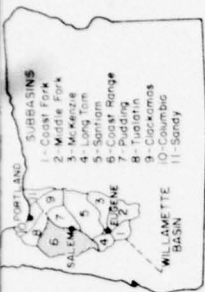
Preservation of Resources

Because of its proximity to major population centers, the farm and forest setting of the subbasin should be maintained for its important scenic value. Zoning to limit urbanization and industrialization is needed. Management of Marys River and Rickreall Creek as scenic rivers in a free-flowing state would enhance recreation values.

Upstream storage to maintain summer flows would benefit both fisheries and recreation use on the Yamhill River. To preserve recreation values in certain streams, the following minimum flows to be maintained during the recreation season are recommended:

<u>Stream</u>	<u>Location</u>	<u>Recommended Flow (Cubic Feet/Second)</u>
Luckiamute River	Mouth	200
Little Luckiamute	River mile 5.0	80
Marys River	Mouth	135
Rickreall Creek	Mouth	80
Yamhill River	Mouth	90
North Yamhill River	River mile 20.8 (Pike)	70
South Yamhill River	Mouth	70
Agency Creek	Mouth	80
Rock Creek	Mouth	70
Willamina Creek	Mouth	70



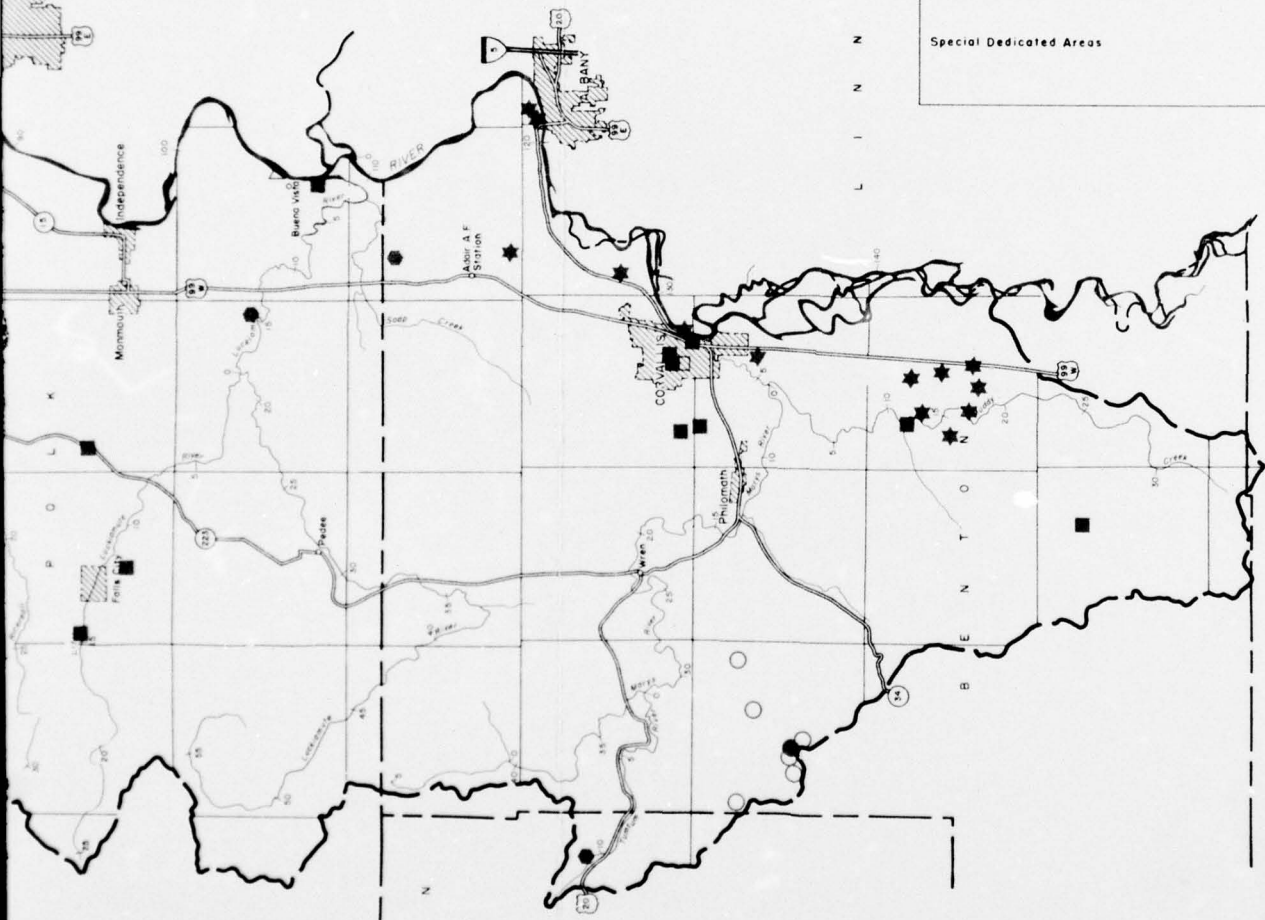


KEY MAP
SHOWING SUBBASINS

LEGEND

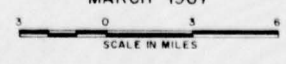
RECREATION SITES
EXISTING POTENTIAL

- U.S. Forest Service ● ○
- State of Oregon ● ○
- Bureau of Land Management ▲ △
- Corps of Engineers ◆ ◇
- City - County ■ □
- Private ★ ☆
- Special Dedicated Areas

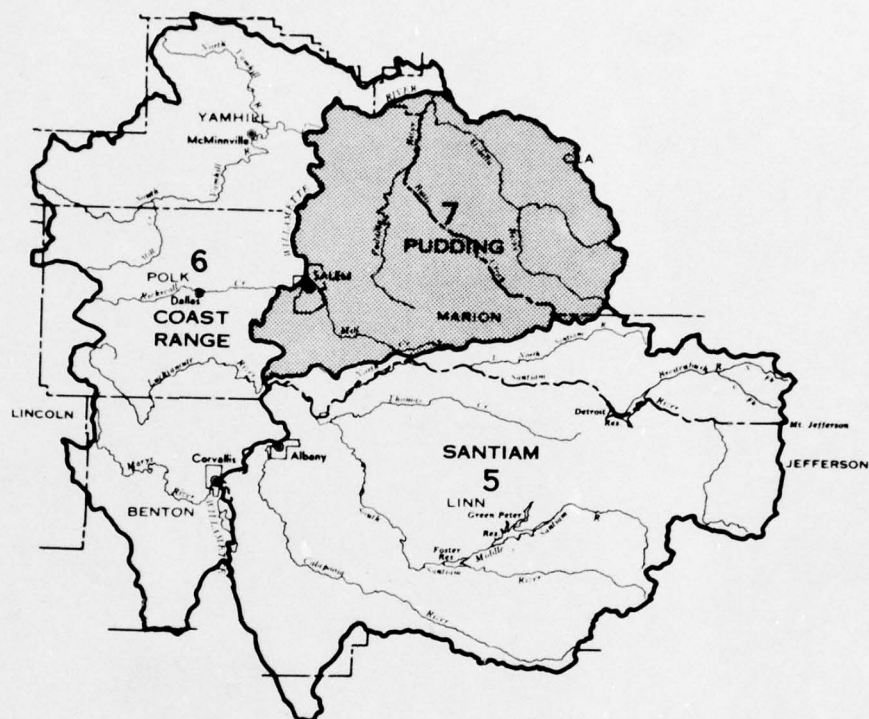


COAST RANGE SUBBASIN
WILLAMETTE BASIN, OREGON
RECREATION SITES

MARCH 1967



SUBBASIN 7 - PUDDING



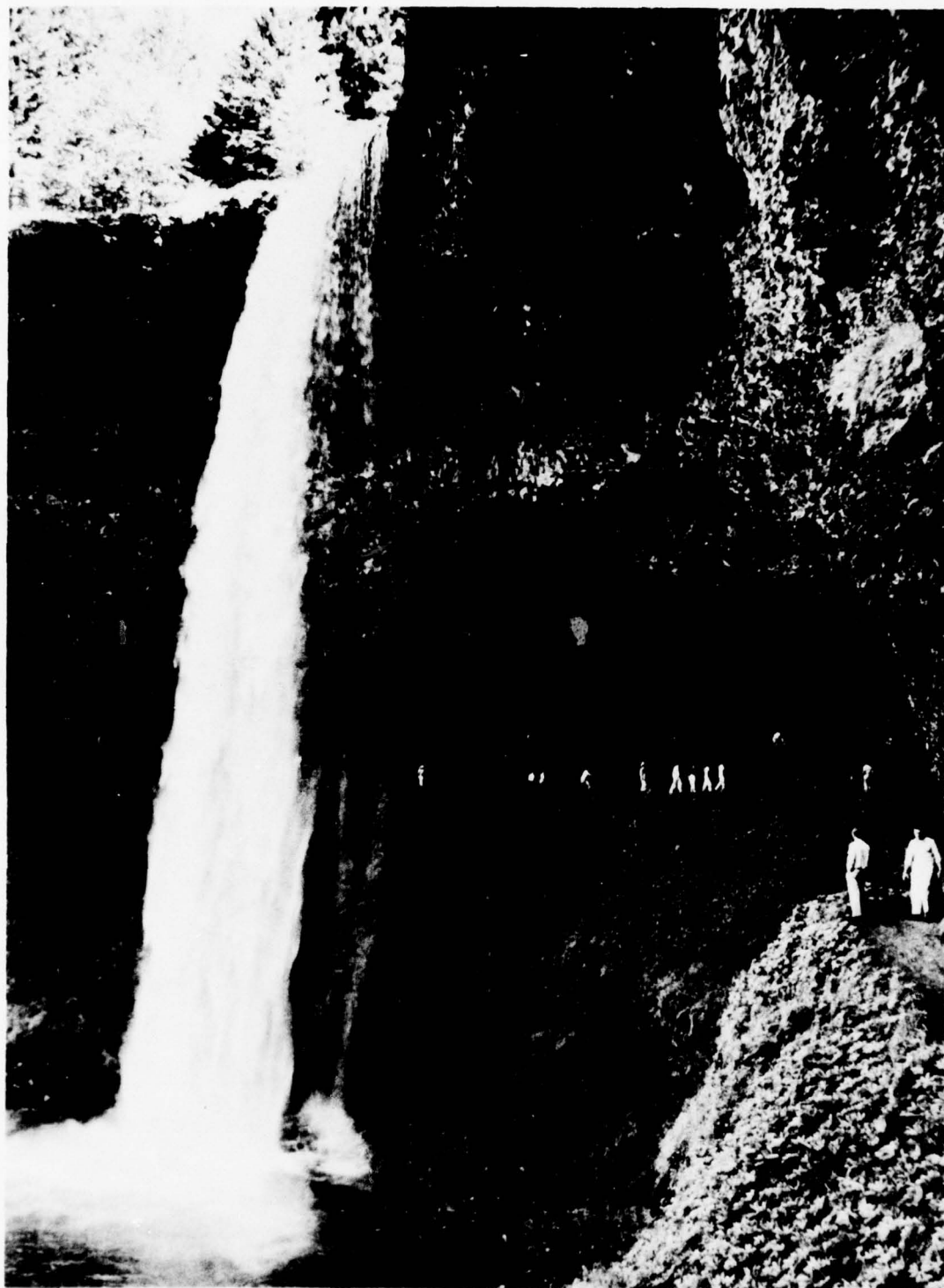


Photo A-19 One of the most popular recreation features in the Willamette Basin is Silver Falls State Park located in the Pudding Subbasin. (O.S.H.D. Photo)

SUBBASIN 7 - PUDDING

Description

The Pudding Subbasin, located east of the Willamette River, includes the Cities of Salem, Turner, Aumsville, Sublimity, Silverton, Mount Angel, Scotts Mill, Molalla, Canby, Hubbard, Barlow, Woodburn, Aurora, and Gervais. About 60 percent of the subbasin is in Marion County, the remainder in Clackamas County.

The headwaters lie in the higher timbered hills of the Cascade Range on the east and southwest. They include the Pudding and Molalla Rivers and principal tributaries, such as Mill Creek, Canyon Creek, North and Rock Forks of the Molalla, Butte Creek, Abiqua, Silver Creek, and Drift Creek. The main water supply comes from the western slope of the Cascade Range. The upper reaches of the stream system are relatively steep, and waters are confined to rather narrow courses. The valley widens and stream gradients decrease materially as they leave the foothills, giving way to the gently rolling valley floor along the Pudding River to its confluence with the Molalla, near the City of Canby.

The subbasin contains about 1,186 square miles. About 46 percent is forest land. Forty-seven percent is devoted to agriculture. The remainder is brush, grazing, or developed areas.

Access

Most of the valley is accessible by automobile. Roads to the higher timberlands are controlled by the Federal government or by private land owners. Public use of private roads is regulated. The main access routes, all surfaced highways, are U. S. 99E which traverses the western portion from north to south; State Highway 213 from Salem to the east and north; and State Highway 211, running east and west across the north-central portion. Many country roads through the agricultural areas are paved. In the lower elevations, many miles of graveled roads provide an excellent network. Except for main timber access routes, the roads in the higher elevations are narrow, low-speed logging roads. Many of these roads are owned and controlled by the timber companies. It is common practice for these companies to limit recreation use of these roads to certain periods each year.

Population and Economy

The economy has been based on diversified agriculture, food processing, logging, and manufacture of lumber and wood products. Other manufacturing, recreation and tourist trade, and State government employment in the Salem area have also been important sources of income. In 1959, the subbasin contained 5,170 farms. The fertile soils and temperate climate are favorable to highly diversified agriculture.

Population and Economy

In 1960, 127,800 persons lived in the subbasin. Density was about 108 persons per square mile.

Projected population

<u>Year</u>	<u>Resident Population</u>	<u>Density Per Square Mile</u>	<u>Participating Population</u>
1980	200,900	168	168,400
2000	255,200	214	213,400
2020	334,600	289	269,900

The relatively low figure of participating population compared to resident population indicates that many residents will seek recreation outside the subbasin.

Recreation Features

Most of the subbasin is rural. The forested hills interspersed with farmlands present pleasant contrast to the more formal appearance of orchards and cultivated lands. The rapid flowing streams and dense forest cover in the upper reaches of the watershed are scenic. Some of the towns and cities in the subbasin have attractive parks, open spaces, and campuses.

The subbasin also contains several points of historical interest dating back to the early settlement of the Willamette Valley. Champoege State Park and the Methodist Mission near Salem are examples.

Silver Creek Falls, Oregon's largest State park, contains 10 major waterfalls. A trail popular with those stout of wind and limb makes the circuit of all the falls. About 75 miles of the Willamette River adjoins this subbasin. This particular segment contains several recreational sites which are covered in the report on the Willamette River Waterway.

Present Use

In 1963, the reported recreation use in the subbasin was 1,166,455 recreation-days, mostly by local people.

Demand

*Estimated demand for water-related
and nonwater-related activities
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>	<u>Nonwater-related</u>	<u>Total</u>
1980	2,832	1,496	4,328
2000	4,285	2,251	6,536
2020	6,265	3,167	9,432

Capacity

The existing capacity of developed recreation resources is inadequate to meet present demand. The inventory on reported sites shows only 8,830 acres of recreation land for the entire subbasin, but this total is somewhat misleading because 8,179 acres are included in Silver Falls State Park. Most of it is undeveloped land.

No developed campgrounds or parks are reported on any of the Federal lands within the subbasin.

There are 178,309 acres inventoried as recreation land. The classified recreation land and resultant nonwater-related capacity by BOR Classification is shown in the following tabulation:

Classified recreation land by BOR Class, 1963

<u>Class</u>	<u>Acres</u>	<u>Nonwater-Related Capacity (Recreation-Days 1,000's)</u>
I	60	180
II	1,637	409
III	168,552	338
IV	7,820	782
VI	172	516
Total		2,225

In addition to the nonwater-related land capacity, there are 140 miles of major streams in the subbasin. Also included are 75 miles of the right bank of the Willamette River. Of about 15 named lakes, five are of less than five acres in size. Twenty-acre Goose Lake is the largest in the subbasin. No reservoirs exist at present. The total capacity for water-related activities is 1,644,000 recreation-days annually.

Problems

Recreational use of the Pudding River is presently restricted because the river is polluted, especially in the lower reaches, and access and recreation development are lacking. The subbasin as a whole is limited for many types of active recreation pursuits such as camping, hiking, or wilderness travel due to the lack of developed access.

Lack of a planned program to encourage sightseeing by way of existing loop drives through the peaceful country setting has contributed to the limited use of this subbasin.

Potential

The Bureau of Land Management, in cooperation with the counties which contain revested Oregon and California railroad grant lands, plans to provide additional access to large areas of public land. Recreational use of small lakes and numerous waterways will result from access into the rugged and beautiful country. Camping, hiking, wilderness travel, and hunting, and fishing opportunity will also be enhanced.

There is considerable interest in developing potential, major water sites in the subbasin. Minor projects such as farm ponds and small watershed projects could also contribute significantly in supplying future needs.

The scenic beauty of the farm and lower timbered country could contribute to recreation opportunity with development of a system of scenic drives to promote greater recreation enjoyment of the subbasin. The higher elevations offer opportunities for attractive day-use areas.

Needs

Based on the previous capacity and demand calculations, the subbasin needs and surpluses are summarized in the following tabulation:

*Summary of surplus and need for outdoor recreation 1/
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>			<u>Nonwater-Related</u>		
	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>
1980	2,832	1,644	-1,188	1,496	2,225	+729
2000	4,285	1,644	-2,641	2,251	2,225	- 26
2020	6,265	1,644	-4,621	3,167	2,225	-942

1/ (-) indicates need, (+) indicates surplus

There is an acute shortage of water-related capacity and, therefore, a growing need for this type of activity throughout the study period. The nonwater-related capacity supply is adequate, at least quantitatively, through 1980. However, locational and qualitative needs now exist.

Goals

In order to satisfy the needs of the subbasin, the following goals are established:

- 1980 - Develop about 3,300 acres of water surface and about 6,500 acres of adjacent land.
- 2000 - Develop an additional 2,900 surface acres of water and 5,800 acres of adjacent land.
- 2020 - Develop 4,000 additional surface acres of water and 8,000 acres of adjacent land.

Recreation Plan

Improvement of Existing Areas

Existing sites should be expanded and improved as much as possible. City and county parks have the greatest potential. The capacity of Silver Creek Falls State Park can be increased considerably. Joint Federal-county and Federal-city programs to develop access to recreation lands, especially those having water-related recreation possibilities, are needed for full realization of the potential.

To meet the need for water-related activities, substantial development along the Willamette River should provide close-in opportunity for subbasin residents. Additional water-surface acreage can be provided by development of potential water-storage projects. The Dickey Bridge and Selah sites would create an additional 3,400 acres of water surface adjacent to Class II lands. Addition of adequate adjacent land would provide opportunity for 1,700,000 recreation-days.

An estimate of preliminary benefits to the recreation function that could accrue with projects follows:

<u>Potential Site</u>	<u>Incremental Visitation (Rec.-Days)</u>	<u>Unit Day Value</u>
Dickey Bridge (initial)	550,000	\$1.25
Selah (initial)	300,000	1.10
Beaver Creek 30T8SR1W	300,000	1.10
Grange (initial)	300,000	1.10

Development of New Areas

Fifteen potential storage sites have been identified which would satisfy needs for additional water-surface acres for outdoor recreation in the subbasin. These sites, based on preliminary data, are listed in the following tabulation by order of their value in supplying additional recreation resource.

Demand for activities such as mountain climbing and snow skiing will have to be met outside the subbasin, because resources for these activities are lacking.

Potential water storage projects in order of recreation priority

<u>Rank</u>	<u>Name of Site</u>	<u>River or Stream</u>	<u>Approximate Reservoir Surface (Acres)</u>
1	Dickey Bridge	Molalla River	2,000
2	Selah Site	Pudding River	1,400
3	Unnamed	Beaver Creek 30T8SR1W	950
4	Grange	Silver Creek	800
5	Unnamed	Little Pudding River	800
6	Pelkey	Molalla River	950
7	North Fork	Molalla River	1,800
8	Unnamed	Pudding River	430
9	Unnamed	Battle Creek	500
10	Unnamed	Rock Creek	1,480
11	Unnamed	Silver Creek	280
12	Del Aire Ranch	Butte Creek	450
13	Unnamed	Butte Creek	280
14	Unnamed	Beaver Creek 17T7SR1W	300
15	Unnamed	Drift Creek	300
Total All Sites			12,720

Other identified potential water development projects in the sub-basin might be considered as alternatives to those in the plan. They are:

<u>Name of Site</u>	<u>Capacity Based on Surface Area (Rec.-days)</u>	<u>Unit Day Value</u>
Silver Creek	140,000	\$0.85
Del Aire Ranch	225,000	0.85
Butte Creek	140,000	0.80
Beaver Creek 17T7SR1W	150,000	0.80
Drift Creek	<u>150,000</u>	0.80
	805,000	

Preservation of Resources

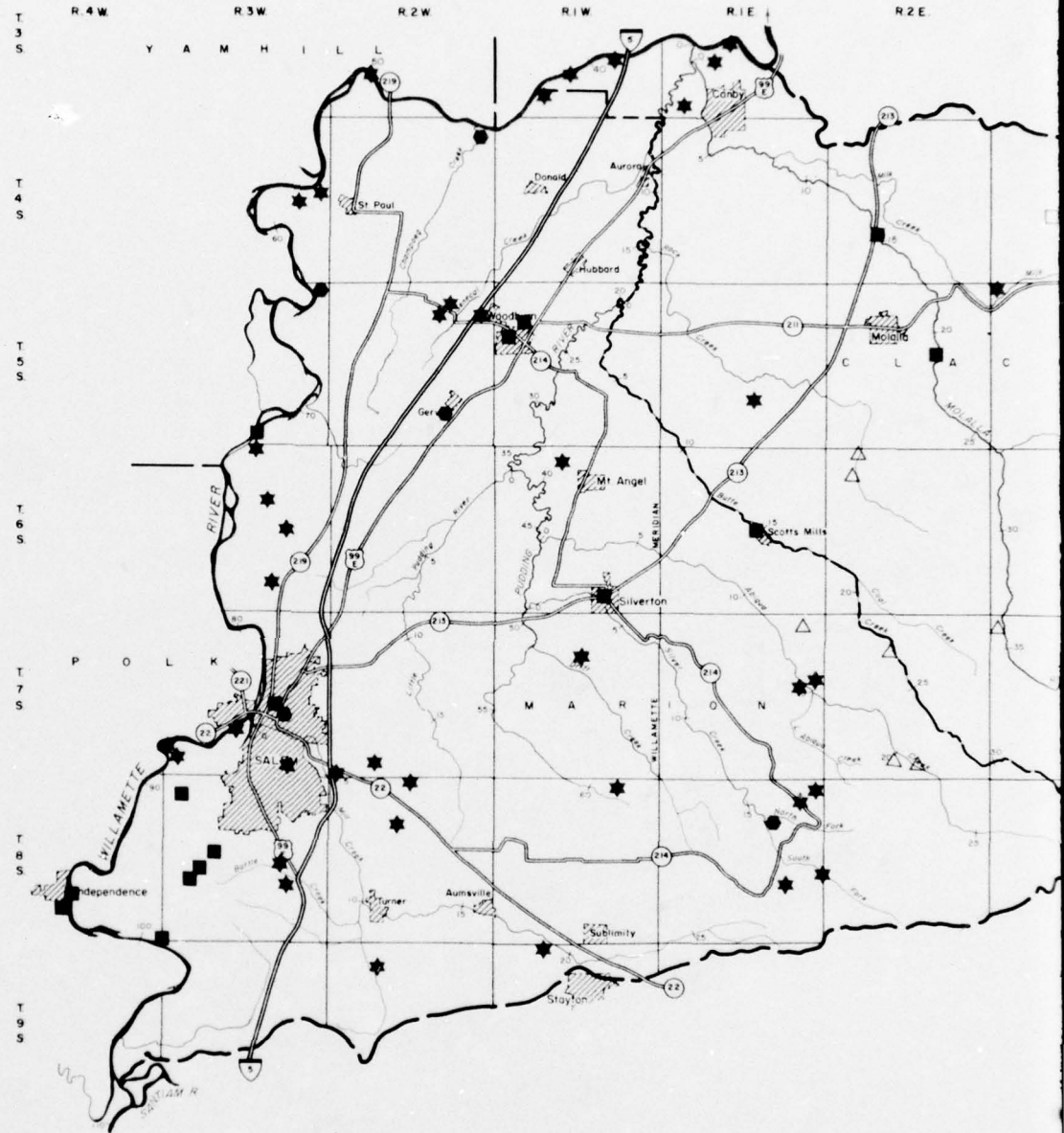
The lack of extensive scenic areas emphasizes the need to protect Silver Creek Falls State Park, the river canyons, and the rich historical and cultural areas from incompatible uses. It is highly desirable to maintain upstream storage with operation schedules to regulate sufficient flows in the Molalla and Pudding Rivers. This will help to maintain the aesthetic qualities during the main recreation season. Recommended minimum flows for the important streams are:

<u>Stream</u>	<u>Location</u>	<u>Recommended Flow (cubic feet/second)</u>
Molalla River	Below Pudding River	300
Molalla River	Above North Fork	140
Molalla River	Above Table Rock	80
Milk Creek	Mouth	85
North Fork, Molalla	Mouth	80
Pudding River	Above confluence with Molalla River	80
Abiqua Creek	Mouth	75
Butte Creek	Mouth	75
Silver Creek	Mouth	60

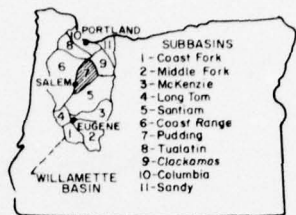


*Photo A-20 Additional outdoor recreation facilities are needed within the Pudding Subbasin to satisfy existing demand.
(U.S.B.O.R. Photo)*

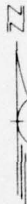
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2



KEY MAP
SHOWING SUBBASINS



LEGEND

RECREATION SITES EXISTING POTENTIAL

U.S. Forest Service	●	○
State of Oregon	●	○
Bureau of Land Management	▲	△
Corps of Engineers	◆	◇
City - County	■	□
Private	★	☆

Special Dedicated Areas

PUDDING SUBBASIN WILLAMETTE BASIN, OREGON RECREATION SITES

MARCH 1967



SUBBASIN 8 - TUALATIN

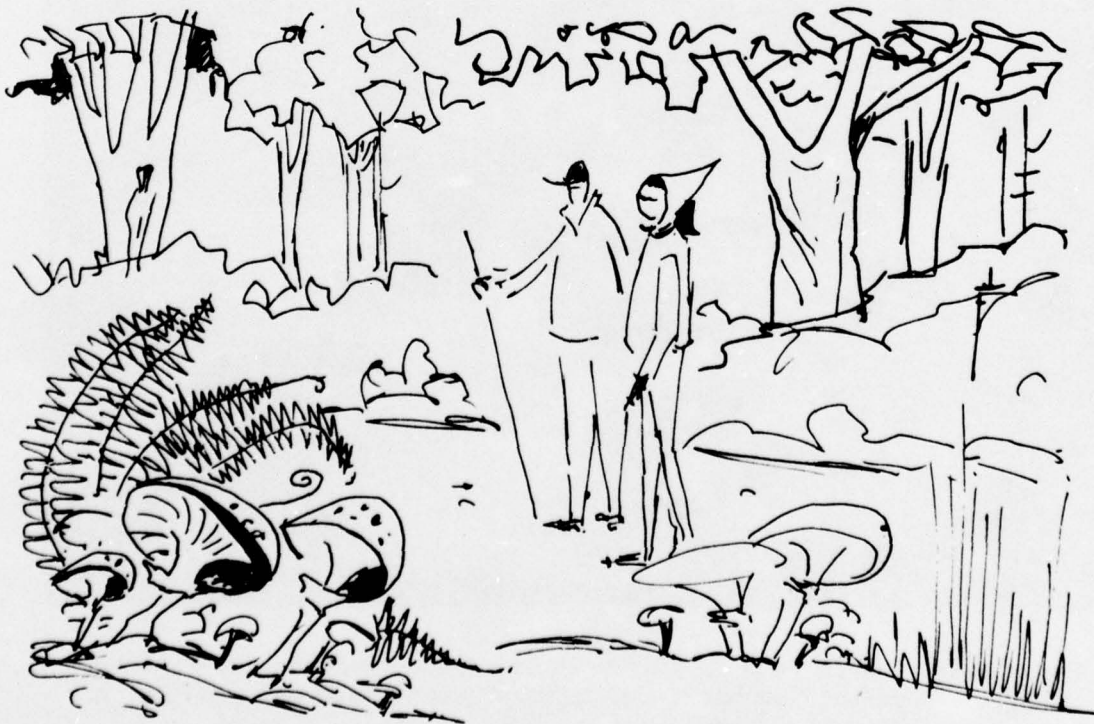
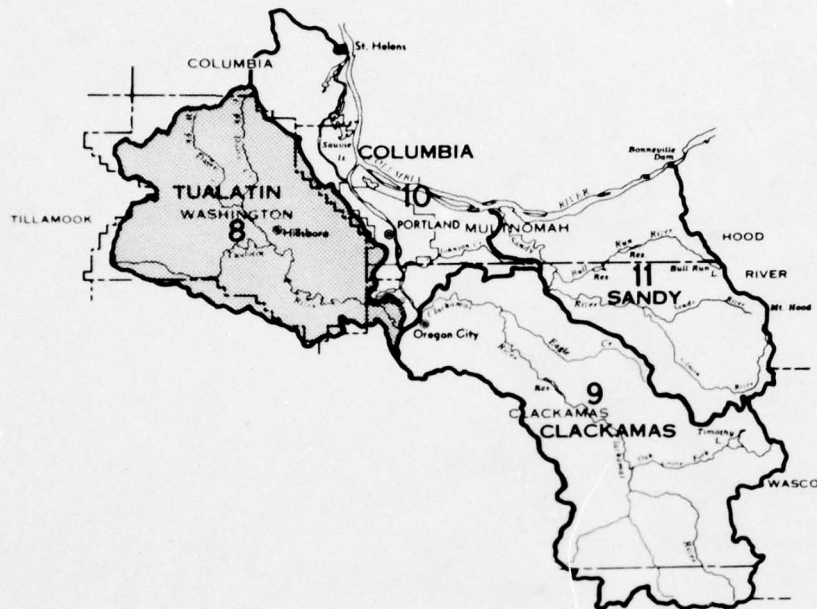




Photo A-21 Public land is scarce in the Tualatin Subbasin, but the private orchards and farms present a pleasant landscape. (O.S.H.D. Photo)

SUBBASIN 8 - TUALATIN

Description

The Tualatin Subbasin, on the west side of the Willamette River, includes a small portion of southwest Portland. The headwaters of the subbasin include the Tualatin River and principal tributaries, such as Scoggins Creek, Gales Creek, East and West Forks of Dairy Creek, McKay Creek, and Rock Creek. They lie in the high timbered hills of the Coast Range and the Tualatin Mountains. The upper reaches of the stream system are steep and confined to narrow courses through timbered country. The valley widens after it leaves the foothills. Stream gradients decrease materially and give way to the very flat valley floor along the Tualatin River to its confluence with the Willamette River south of Portland. About 90 percent of the subbasin is in Washington County; the remainder is in Yamhill, Multnomah, and Clackamas Counties.

The subbasin contains 711 square miles. About 50 percent is forest land; 37 percent is devoted to agriculture; and 13 percent is in brush, grazing, and developed areas.

Access

The main routes through the subbasin from the Portland area are U. S. 26, which traverses the north portion from east to west; State Highway 8 through the center of the subbasin; and State Highways 219, 208, 210, and 212 in the southeast part of the subbasin. State Route 47 provides north-south access between U. S. 26 and the southern boundary. All of the major routes are paved. In addition, many oiled county roads through the agricultural areas and many miles of secondary gravel roads provide an excellent network throughout the subbasin. In the forested areas, many roads are owned and controlled by the private timber companies and may be available for recreation use only during certain periods of the year.

Population and Economy

In 1960, the population of the subbasin was 114,000, a density of about 160 persons per square mile.

Projected population

<u>Year</u>	<u>Resident Population</u>	<u>Density Per Square Mile</u>	<u>Participating Population</u>
1980	166,000	237	108,000
2000	234,000	334	153,000
2020	364,000	520	246,000

The participating population compared to resident population indicates that many subbasin residents are likely to seek outdoor recreation at areas outside the subbasin.

Agriculture, light industry, and forest products constitute the major employment opportunities. In 1959 the subbasin contained 3,125 farms, but recent urban development has converted considerable farmland to other uses.

Recreation Features

The most significant aspect of the subbasin's projected recreation use is close proximity to the Portland metropolitan area. Most of the subbasin provides a restful rural, outdoor setting. The forested hills interspersed with farms contrast with the formal appearance of the orchard plantations. The upper reaches of the watershed with the swift streams and dense forest cover are very scenic. The cities and towns of the subbasin have attractive parks, colleges, and open spaces.

The subbasin also contains several points of historical interest related to early settlement of the Willamette Valley. The initial point for the public land survey of Oregon is located in the subbasin, at Willamette Stone State Park. The site where the disastrous Tillamook fire started is near Glenwood.

Present Use

The 1963 reported recreation use in the subbasin was 792,500 recreation-days. Of these, 8,500 were reported at State-administered sites, the remainder were in city and county areas. Most of the reported recreation visits were by the local population.

Demand

*Estimated demand for water-related
and nonwater-related activities
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-related</u>	<u>Nonwater-Related</u>	<u>Total</u>
1980	1,832	967	2,799
2000	3,070	1,613	4,683
2020	5,718	2,889	8,607

Capacity

The existing capacity of developed recreation resources in the sub-basin is inadequate to meet present demand. The inventory of reported sites includes only 525 acres of developed recreational land for the entire subbasin. Of the 29 reported developed areas, 24 are city and county. The Bald Peak State Park is used entirely for day use. The Bureau of Land Management administers the Little Bend Recreation Site on the East Fork of Dairy Creek.

There are a few private areas in the subbasin. They are Trolley Park, on upper Gales Creek west of Glenwood, a 26-acre park and scenic railroad, and the U-Catchum Trout Farm and picnic area, 10 miles north of North Plains on the East Fork of Dairy Creek.

The classified recreation land and resultant nonwater-related capacity by BOR Classification is shown in the following tabulation:

Classified recreation land by BOR Class, 1963

<u>Class</u>	<u>Acres</u>	<u>Nonwater-Related Capacity (Recreation-Days 1,000's)</u>
I	20	60
II	264	66
III	70,000	140
Total		266

There is no significant supply for water-related activities at present.

Problems

The present recreational use of the Tualatin River is low because it is polluted, especially in the lower reaches, and lacks appropriate access and recreational development. Boating is also hampered by obstructions such as logs, rock ledges, and debris. The upper part of the river above Gaston, however, has a pleasant, natural setting and is not polluted. This segment is used primarily for fishing, swimming, and picnicking.

As a whole, the subbasin lacks appeal for such active recreation pursuits as camping, hiking, or wilderness travel. There are no outstanding features such as waterfalls, canyons, rugged mountain peaks, or large lakes. As a consequence, the subbasin has developed slowly for recreation use.

The lack of a planned program to encourage sightseeing on existing loop drives through the tranquil country setting has resulted in light use despite the subbasin's proximity to a large metropolitan area.

Potential

Although no outstanding recreation features are present, the Tualatin Subbasin has potential because it is close to Portland. Its upper reaches are forest lands, and it contains farmlands, orchards, and streams. Since there is a shortage of recreation water, impoundments would provide extensive benefits for water-oriented activities.

Potential water impoundments such as the authorized Scoggin Dam and Reservoir and the prospective McKay Creek and Rock Creek projects, will help alleviate shortages. There are other potential water development projects such as Gales Creek, East Fork of Dairy Creek, and Gaston No. 1, which would provide needed additional recreation water.

Other minor potential projects, such as farm ponds and small watershed projects, would help in satisfying future needs.

Needs

Based on the previous capacity and demand calculations, the sub-basin needs are summarized in the following tabulation:

*Summary of need for outdoor recreation ^{1/}
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>			<u>Nonwater-Related</u>		
	<u>Demand</u>	<u>Capacity</u>	<u>Need</u>	<u>Demand</u>	<u>Capacity</u>	<u>Need</u>
1980	1,832	0	-1,832	967	266	- 701
2000	3,070	0	-3,070	1,613	266	-1,347
2020	5,718	0	-5,718	2,889	266	-2,628

^{1/} (-) indicates need

It is evident that there is an existing and rapidly increasing need for additional supply for both water-related and nonwater-related recreation opportunities.

Water-Related

To satisfy the present water-related demand, about 1,800 surface acres of water and 3,600 acres of adjacent land (Class II) would be required. Such water acreage would be used to the greatest advantage if it were developed in the form of several reservoirs from 500 to 2,000 acres in size. By 1980 an additional 1,300 acres of surface water and 2,600 acres of land would be needed. By 2000 a total of 4,600 acres of water and 9,200 acres of adjacent land would be necessary. By 2020 the need would increase to 9,000 acres of water and 18,000 acres of adjacent lands.

In order to help satisfy certain quality and aesthetic needs of the subbasin, the Tualatin River should be managed as a scenic river, and minimum flows should be maintained.

Nonwater-Related

Land for nonwater-related activities should be provided primarily in the form of Class I lands in areas closest to the metropolitan areas having the highest demand. The estimate of Class I land need at present is 260 acres. For 1980 it would be 470 acres; for 2000, 800 acres; and for 2020, 1,350 acres. This land would be primarily in jurisdiction of local and county governments. There also is a need for additional private land developments to supply additional recreation opportunities.

Goals

Achievement of the following goals is necessary to adequately manage and develop the recreation resources of the subbasin to satisfy the needs:

1. Promote development of recreation facilities by private enterprise along the Tualatin River and throughout the subbasin.
2. Provide an adequate system of neighborhood community parks in the urban areas.
3. Preserve scenic qualities of the subbasin by controlling adverse influences and maintaining desirable minimum streamflows.
4. Develop a plan to preserve irreplaceable resources which are of cultural and historical significance. Incorporate environmental quality into all projects and programs within the subbasin.
5. Provide water surface acreage for recreation through construction of suitable water storage projects.

6. Improve the existing recreation areas in the subbasin.
7. Develop and manage the Tualatin River to enhance environmental quality and to provide for recreation use.

Recreation Plan

Improvement of Existing Areas

Both the existing Bald Peak State Park and the Little Bend Recreation Site can be expanded to satisfy additional demands. The principal need is for day-use facilities at both areas. Many of the sites under city and county jurisdiction can be expanded.

Development of New Areas

To provide water surface adequate to meet current needs for recreation, the following water projects should be constructed as early as possible: Scoggins Dam and Reservoir, Rock Creek, McKay Creek, and the Gales Creek Reservoir. For recreation requirements between 1980 and 2000, further authorization studies are needed on the East Fork of Dairy Creek and the Gaston projects. Small farm ponds suitable for general recreation should be provided on private lands. A minimum of 20 private ponds of five to 25 acres are needed. An open space and a green belt should be provided along Fanno Creek between Tigard and Tualatin.

A strong county park organization and a plan to provide the necessary local facilities are needed. The communities of Hillsboro, Beaverton, and Forest Grove likewise should intensify their efforts to provide urban parks and recreation areas for increasing populations. Local government agencies with recreation responsibilities should participate in promoting projects within the subbasin through the state-wide recreation planning process. Study of the Tualatin River should be made as to its potential as part of a scenic river system. Management of Fanno Creek for its scenic attraction is needed to accommodate local use.

Water Projects

Seoggins Reservoir

In addition to the benefits of irrigation, flood control, municipal and industrial water supply, and fish and wildlife purposes, this authorized project will provide an additional 1,000 acres of water surface in the Tualatin Subbasin. Included would be recreation facilities and additional lands based on the estimated project visitation. The estimated capacity is 500,000 recreation-days. The capacity of the reservoir should be reached by 1980.

Rock Creek Reservoir

This 9,000-acre-foot reservoir would have flood control and irrigation functions in addition to recreation. Provision for a minimum pool of 560 surface acres is being investigated. Proximity to the Portland area indicates that primary emphasis should be placed on recreation day-use facilities.

This project would be a Class I - High Density Area. If additional land is available, this area could support a total of 1,000,000 recreation-days annually, but this level would not be reached until after 1980. The preliminary investigation report, dated April 1966, indicates immediate use of 450,000 recreation-days. By 1980 this would increase to 700,000 and reach 1,000,000 by year 2000. Portland area residents would supply the most use; but subbasin residents from Beaverton, Hillsboro, and Tigard would also benefit.

McKay Creek Reservoir

This proposed reservoir would be located on McKay Creek about 16 miles upstream from the Tualatin River. The project is supported by local interests. Purposes include flood control, irrigation, and municipal and industrial water supply in addition to recreation.

The preliminary report indicates that a minimum pool of 150 acres would be reserved for recreation and sediment storage. It also states that the 90 acres designated for recreation development should provide for enhancement of the natural setting with emphasis on group camping and fishing. The topography adjacent to the proposed reservoir is much steeper than at Rock Creek and would require careful planning to provide optimum recreation use. It may be necessary to acquire areas for parking below the dam, thus, reserving the limited level sites near the water for development of picnic and camping areas. At least 600 acres of land should be made available for recreation use.

Hiking and riding trails can be provided in the general area to add to the variety of activities. Provisions could be made for transportation from the parking area to the recreation sites on the reservoir.

Water Projects

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Hiking and riding trails can be provided in the general area to add to the variety of activities. Provisions could be made for transportation from the parking area to the recreation sites on the reservoir.

Gales Creek Reservoir

The potential Gales Creek Reservoir could provide 1,500 to 2,300 surface acres of water. By making 4,000 acres of adjacent lands available, the estimated capacity of 1,000,000 recreation days should be attained by 2020. Administration of recreation at this reservoir probably would be at the county level.

Tualatin River

It is estimated that the portion of the Tualatin River from Gales Creek to its confluence with the Willamette River, along with certain acquired lands and scenic easements should have capacity to supply 400,000 recreation-days annually in the period 1980 to 2020. To reach this will require acquisition of suitable access sites at four- to eight-mile intervals along the 50-mile length of the river. Also, it will be necessary to obtain scenic easements along the river banks to protect the natural setting.

If the proposed channel improvement project for the Tualatin River is carried out, it should contain provisions for environmental enhancement, recreation development, public access, and wildlife habitat improvement.

East Fork Dairy Creek

The potential East Fork Dairy Creek project would provide an additional 800 to 1,300 acres of water surface in the subbasin. The project would have a total capacity of 320,000 recreation-days annually if 2,000 acres of adjacent land were developed. Either the State of Oregon or Washington County should administer the recreation lands and facilities.

*Summary of recreation plan for
water-related activities*

<u>Projects</u>	<u>Recreation-Days</u>	<u>Unit Day Value</u>
<u>Year 1980</u>		
Scoggins Creek	500,000	\$0.90
Rock Creek	700,000	1.25
McKay Creek	100,000	1.00
Gales Creek	400,000	1.00
Tualatin River	<u>40,000</u>	0.80
Total at 1980	1,730,000	
<u>Year 2000</u>		
Scoggins Creek	500,000	\$0.90
Rock Creek	1,000,000	1.25
McKay Creek	150,000	1.00
East Dairy Creek	220,000	1.00
Tualatin River	200,000	0.80
Gales Creek	<u>700,000</u>	1.00
Total at 2000	2,770,000	
<u>Year 2020</u>		
Scoggins Creek	500,000	
Rock Creek	1,000,000	
McKay Creek	150,000	
East Dairy Creek	320,000	
Tualatin River	400,000	
Gales Creek	<u>1,000,000</u>	
Total at 2020	3,370,000	

Preservations of Resources

The scenic value of the farm and orchard setting should be maintained to benefit driving for pleasure and sightseeing. The control of urbanization and industrialization, by zoning areas adjacent to the most heavily used scenic drives, would aid in preserving the resource.

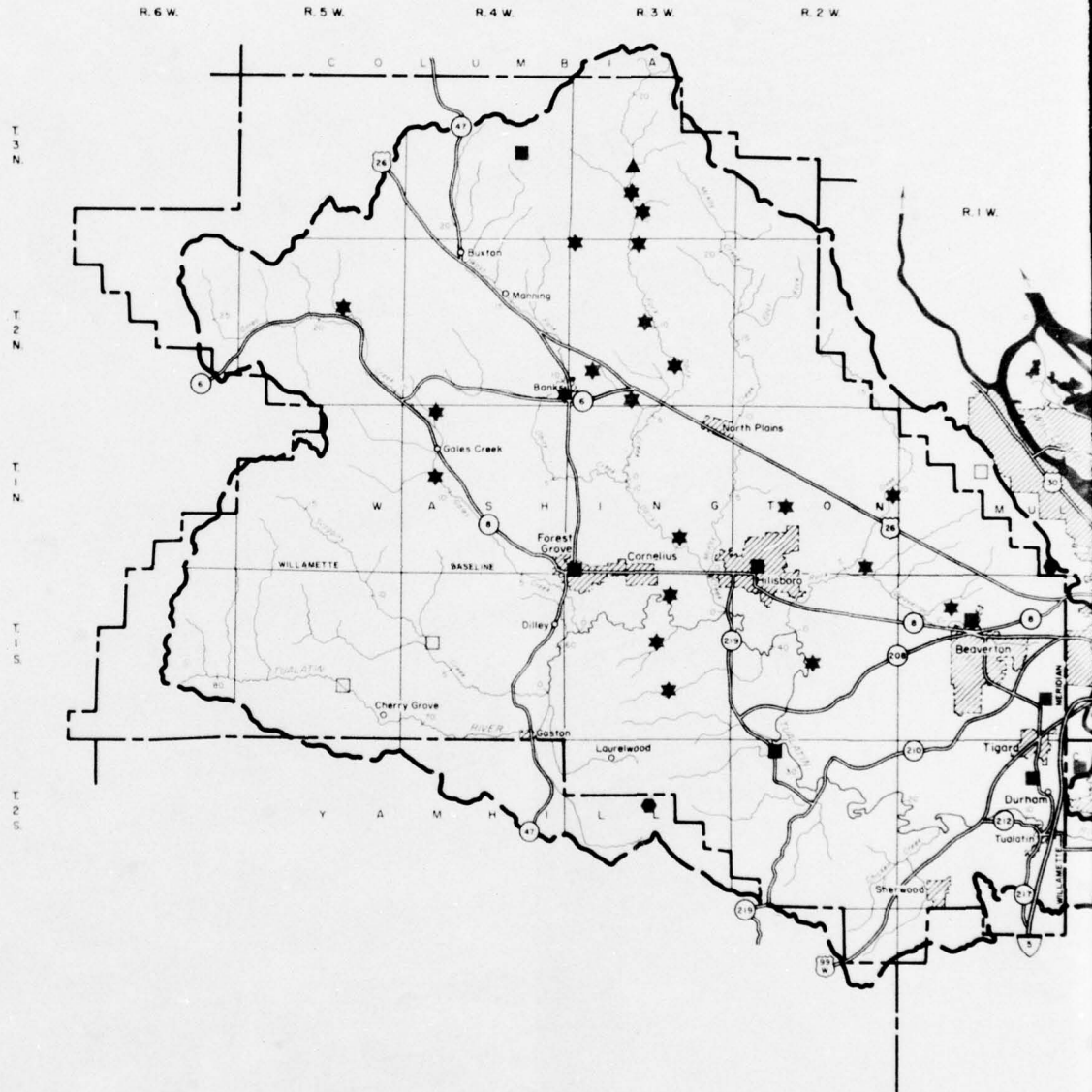
Management of the Tualatin River as a scenic river in a free-flowing state would also enhance scenic values. Upstream storage with operation schedules to maintain flows in the Tualatin River, East Fork of Dairy Creek, McKay Creek, and Scoggins Creek to enhance the aesthetic qualities of these streams during the main recreation season would be desirable.

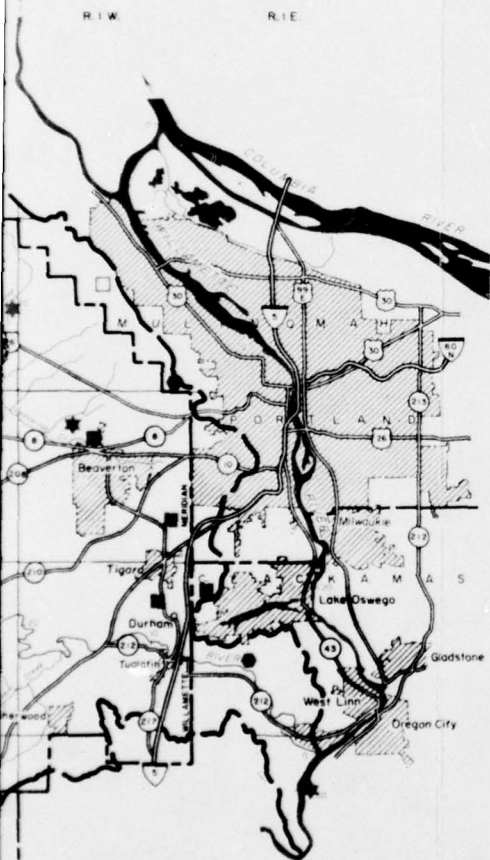
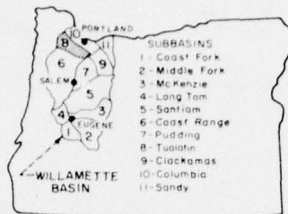
Scenic Lee Falls on the upper Tualatin River should be preserved and enhanced by development of public use facilities.

The following minimum flows are recommended during the recreation season to enhance the recreation environment:

<u>Stream</u>	<u>Location</u>	<u>Flow</u> <u>(Cubic Feet/Second)</u>
Tualatin River	USGS gage 2075 (Willamette)	30
Tualatin River	USGS gage 2035 (Dilley)	30
Tualatin River	River Mile 70.0	65
Dairy Creek	Mouth	15
East Fork	River Mile 13.0	50
McKay Creek	River Mile 15.5	35
Gales Creek	Mouth	100
Gales Creek	River Mile 12.0	70
Scoggins Creek	Mouth	40

Prepared by
WILLAMETTE BASIN TASK FORCE
of the
PACIFIC NORTHWEST RIVER BASINS COMMISSION





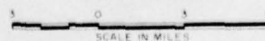
LEGEND

RECREATION SITES EXISTING POTENTIAL

U.S. Forest Service	●	○
State of Oregon	●	○
Bureau of Land Management	▲	△
Corps of Engineers	◆	◇
City - County	■	□
Private	★	☆
Special Dedicated Areas		

TUALATIN SUBBASIN WILLAMETTE BASIN, OREGON RECREATION SITES

APRIL 1967



SUBBASIN 9 - CLACKAMAS

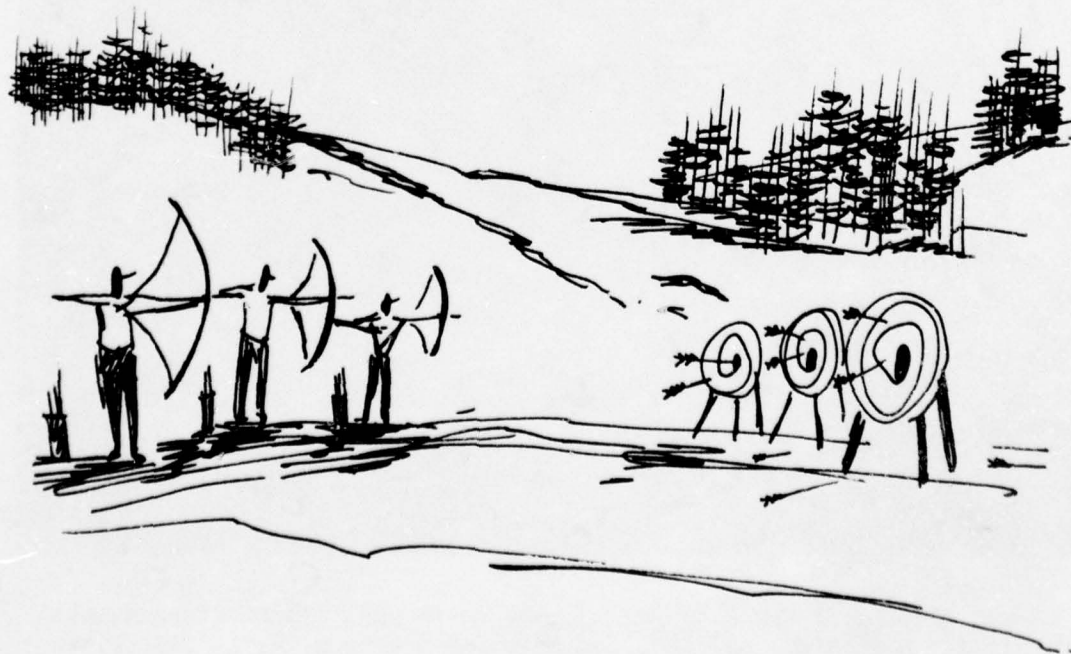
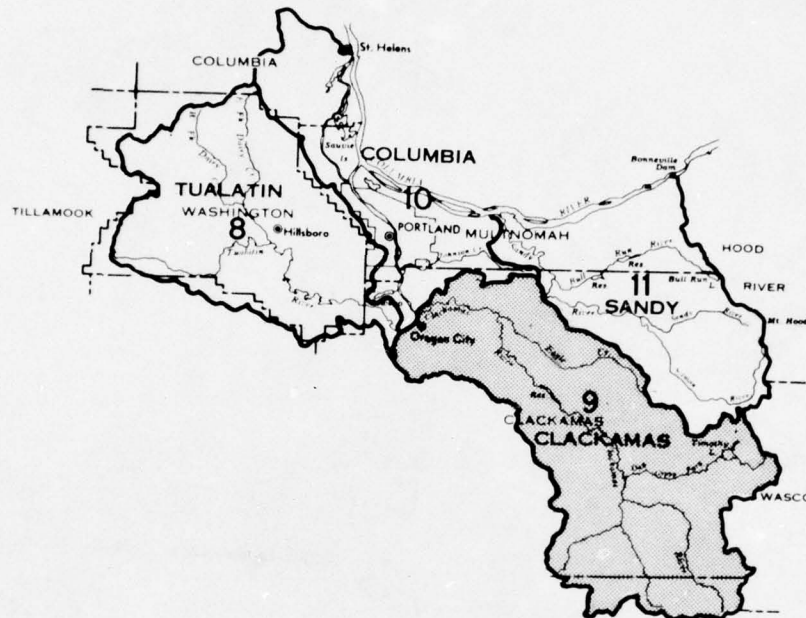




Photo A-22 Eagle Creek is one of many basin vacationland streams where fishing, boating, and swimming are popular. (O.S.H.D. Photo)

SUBBASIN 9 - CLACKAMAS

Description

The Clackamas Subbasin extends southeast of the Willamette River, from Gladstone to the Clackamas-Wasco County line. The Clackamas River is the primary stream. Important tributaries are Clear Creek, Eagle Creek, Fish Creek, Oak Grove Fork, and the Collawash River. The drainage formation ranges from narrow valleys in the headwaters to rather broad, flattened lands near the confluence with Willamette River. The subbasin contains 1,014 square miles. Of this, about 85 percent is in forest, 12 percent in agriculture, and three percent in industrial and other types of use.

Access

Paved roads provide access to the lower portion of the subbasin. Perhaps two-thirds of the entire area is accessible by means of a paved road up the Clackamas River (Oregon 224) with gravel forest roads leading to tributary streams. Much of the road system is in the upper portion of the subbasin and consists mainly of logging roads. In the upper portion, within the Mt. Hood National Forest, there are 325 miles of road, and 1,050 miles are planned within the next three decades.

U. S. 99E on the west and U. S. 26 on the north are primary routes of travel. State Highways 213, 211, and 224 provide major internal access. The number and quality of roads have been improved during the past few years.

Population and Economy

In 1960, the subbasin had a population of 35,700, an average density of 35 people per square mile.

Projected population

<u>Year</u>	<u>Resident Population</u>	<u>Density Per Square Mile</u>	<u>Participating Population</u>
1980	51,900	51	98,400
2000	73,200	72	138,400
2020	113,900	112	209,000

The area has a large timber supply; timber harvesting and processing is the most important economic activity in the subbasin. Agriculture and recreation are other important industries.

Recreation Features

Numerous outstanding recreation features provide opportunity for diverse development. Elevation ranges from 55 feet above sea level at Oregon City to more than one mile in the Cascade Range. This affects the timing of various recreational activities and season of use. The subbasin is close to Portland, making it available for recreation to an ever-increasing number of people. The Clackamas River and most tributaries are scenic streams and have good fishing. The Eagle Creek Fish Hatchery is a recreation attraction. North Fork Reservoir, Timothy Lake, and Lake Harriet are parts of the Clackamas hydro-electric system developed by Portland General Electric. Both North Fork Reservoir and Timothy Lake experience heavy recreation use.

McLoughlin House and a portion of the Barlow Trail are important historical features in the lower portion of the subbasin.

The subbasin contains five reservoirs and three major potential reservoir sites. In addition to the public and private recreation facilities in the subbasin, the farmscape in the lower portion and the forest setting in the upper reaches provide an ideal environment for pleasure driving.

Present Use

In 1963, reported recreation use was 558,300 recreation-days. Most recreation developments in the lower subbasin were provided by the county park system. Those in the upper subbasin were provided by the Forest Service.

People from outside the subbasin contributed about half of the total recreation use. Most of the outside visitation came from the Portland area.

Demand

*Estimated demand for water-related
and nonwater-related activities
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>	<u>Nonwater-Related</u>	<u>Total</u>
1980	1,654	874	2,528
2000	2,780	1,460	4,240
2020	4,852	2,452	7,304

Capacity

Development of the recreation resource has lagged somewhat behind demand. Developments have been built along main travel routes through the heart of the subbasin, mostly in the National Forests. Construction of reservoirs at Timothy Lake and North Fork has enhanced water-oriented recreation. Scenic quality constitutes much of the recreation value of these reservoirs which have limited acreage for development, making it important to give consideration to aesthetics when analyzing each project.

The classified recreation land and resultant nonwater-related capacity, by BOR classification is shown in the following tabulation:

Classified recreation land by BOR class, 1963

<u>Class</u>	<u>Acres</u>	<u>Nonwater-Related Capacity (Recreation-Days 1,000's)</u>
I	21	
II	6,670	63
III	548,799	1,668
IV	6,709	2,744
		<u>671</u>
Total		5,146

The subbasin contains 56 lakes less than five acres, 15 between five and 10 acres, and four of more than 100 acres. It is estimated that there are 270 miles of streams in the subbasin suitable for recreation. In addition, there are five existing reservoirs. The existing water-related capacity is 1,023,000 recreation-days annually.

Problems

Two problems affecting development within the subbasin are of prime importance. Adequate financing for development is lacking, particularly at the Federal level, and the impact on local government of the visitor load from outside the county is severe.

Streamflow surges in the Clackamas River because of power releases from the reservoirs are very noticeable. This causes problems for recreationists.

Other problems concerning disposal of waste, zoning, and significant erosion of river banks adjacent to recreation sites have been developing. Without adequate overall planning, the lower part of the subbasin could easily lose the charm of its present farmscape.

Potential

There is abundant opportunity to develop camp and picnic areas throughout the subbasin. More than 250 potential sites have been identified by Federal agencies, mostly in the Mt. Hood National Forest. Oregon City has located a 15-acre site. Clackamas County has recreation land not yet classified. The identified sites include about 2,800 acres which could support about 1,050,000 recreation days annually. Most of these sites are on lakes or streams rather than on reservoirs. Because of the nature of Class III lands in this subbasin, the acre capacity determined by using standard factors is believed to be low. No wilderness is involved, and sites in the general area are often well developed. A factor of five recreation-days per acre appears reasonable and has been used to calculate capacity.

Additional water surface acres may not be available in the foreseeable future. It is anticipated that projects in other areas will be built first. Rivers and streams have good development potential. Capacity is directly related to access and development. A wide range of recreation activities are possible, but most of these are now oriented to forest settings. High-density development opportunities will take place mainly in the lower Clackamas River drainage. Private recreation potential is now only slightly utilized. Private recreation complexes could be developed in the lower subbasin to provide a complete, modern recreation package for users, including golf, horseback riding, short trail hikes, and swimming pools, along with suitable restaurants and lodging.

About 8 miles of Willamette River lies in this subbasin. Most of this has ideal recreation potential because it is near population centers. Details on this segment are included in the evaluation of the Willamette River Waterway.

Needs

Based on the previous capacity and demand calculations, the subbasin needs and surpluses are summarized in the following tabulation:

*Summary of surplus and need for outdoor recreation ^{1/}
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>			<u>Nonwater-Related</u>		
	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>
1980	1,654	1,023	- 631	874	5,146	+4,272
2000	2,780	1,023	-1,757	1,460	5,146	+3,686
2020	4,852	1,023	-3,829	2,452	5,146	+2,694

^{1/} (-) indicates need, (+) indicates surplus

The quantitative supply of nonwater-related resources is adequate to meet present and future demands. However, there is an immediate and rapidly increasing need for additional water-related capacity.

Since there is little chance that significant amounts of new water area will be made available, some of the demand should be transferred to other areas.

Goals

It is not likely that water-surface demands will be met in the future with existing and potential reservoir locations. An attempt must be made to provide access and facilities on the Willamette River and to develop other water-oriented areas more intensively. Class III lands should undergo gradual conversion to higher intensity use, by suitable development throughout the subbasin. Small water projects in the lower portion of the subbasin could help satisfy needs. Higher-standard roads providing scenic loop drives should be built to satisfy demand for pleasure driving and to disperse other uses. It will be necessary to satisfy swimming activity primarily by construction of swimming pools in metropolitan areas.

Recreation Plan

State, county, and other local sites should be expanded and improved to provide recreation near population centers. Day-use facilities should dominate on the close-in sites; however, organizational campgrounds with sports areas are needed. An excellent organization development is part of the Clackamas County recreation site at Barton Park. Other similar opportunities for youth activities should receive high priority. Overnight camping sites should continue to be developed.

Major routes should be improved for general road travel. Landscape areas should continue to be managed along major travel routes in national forests. Further study may be needed to assure retention of natural beauty along routes of future roads. Roadside vista points are needed. Action at the State and county level should promote road and streamside beauty. This can be accomplished by various means through acceptance of land donations, land purchase, good management of publicly owned lands, zoning, scenic easements, and perhaps tax benefits to landowners participating in outdoor beauty programs.

The day-night ratio of use is expected to be three to one. Slightly higher overnight use can be expected in the headwaters area. The headwaters, principally in the Mt. Hood National Forest, provide good opportunity for such development.

Nonwater-Related Development

Most nonwater-related recreation demands are now being met, but overuse of sites is common. The potential sites now inventoried are adequate for the foreseeable future. Additional conversion of Class III lands could increase overall capacity of the subbasin to provide recreation opportunity.

Water Projects

Existing slack water areas in the subbasin total 2,046 acres. Needs exceed potential capacity. Although other areas may provide for transfer of opportunity, further study of potential sites is needed. New uncharted small-reservoir sites may hold the best chance for additional supply in this subbasin.

Big Bottom Reservoir

Big Bottom Reservoir project, if constructed, could provide about 1,700 acres of water surface and 300 acres of recreation sites by the year 2000. Estimated capacity for these lands and the water area are 1,150,000 recreation days per year. This is based on year 2000 with 600 family units and a 100-day season. The project would not be built prior to 1980, so year 2000 base is used. Between the years 2000 and 2020, an additional 100 acres could be developed if needed. Pertinent recreation data for this project are shown in the following tabulation:

<u>Year</u>	<u>Visitation</u> (rec.-days)	<u>Unit Day Value</u>
2000 (initial)	500,000	\$1.00
2020	1,150,000	\$1.00

Upper Austin Point Project

Upper Austin Point project site is located on the Collawash River about 1-1/2 miles above its confluence with the Clackamas. The pool elevation is estimated between 1,846 and 1,905 feet which gives a range of water acreage between 1,200 and 1,900 acres. The site is entirely within the Mt. Hood National Forest. Because of limited access, probable visitation would be only about 25,000 recreation-days. Full use of water surface would be difficult because of limited land for development.

Lower Austin Point Project

The Lower Austin Point project site is 1/2 mile below the confluence of the Collawash and Clackamas Rivers. A preliminary Forest Service report indicates recreation loss would be significant if the project were constructed. Little detailed information is available with which to calculate visitation or costs.

Summary of water-related recreation alternatives

<u>For Cost Period</u>	<u>Needed Water Acres</u>	<u>Surface-Acre Alternatives</u>	<u>Recreation- Days (1000)</u>
1963-1980			
Willamette River		200	100
Small ponds, Reservoirs		100	50
Other Streams		90	45
Swimming Pools		<u>50</u>	-
Total	631	440	
1980-2000			
Willamette River		100	100
Small Ponds, Reservoirs		100	50
Big Bottom Reservoir		1,700	1,150
Other Streams		90	45
Swimming Pools		<u>100</u>	-
Total	1,757	2,090	
2000-2020			
Willamette River		115	
Small Ponds, Reservoirs		100	
Other Streams		90	45
Swimming Pools		<u>721</u>	-
Total	3,829	1,026	

Preservation of Resources

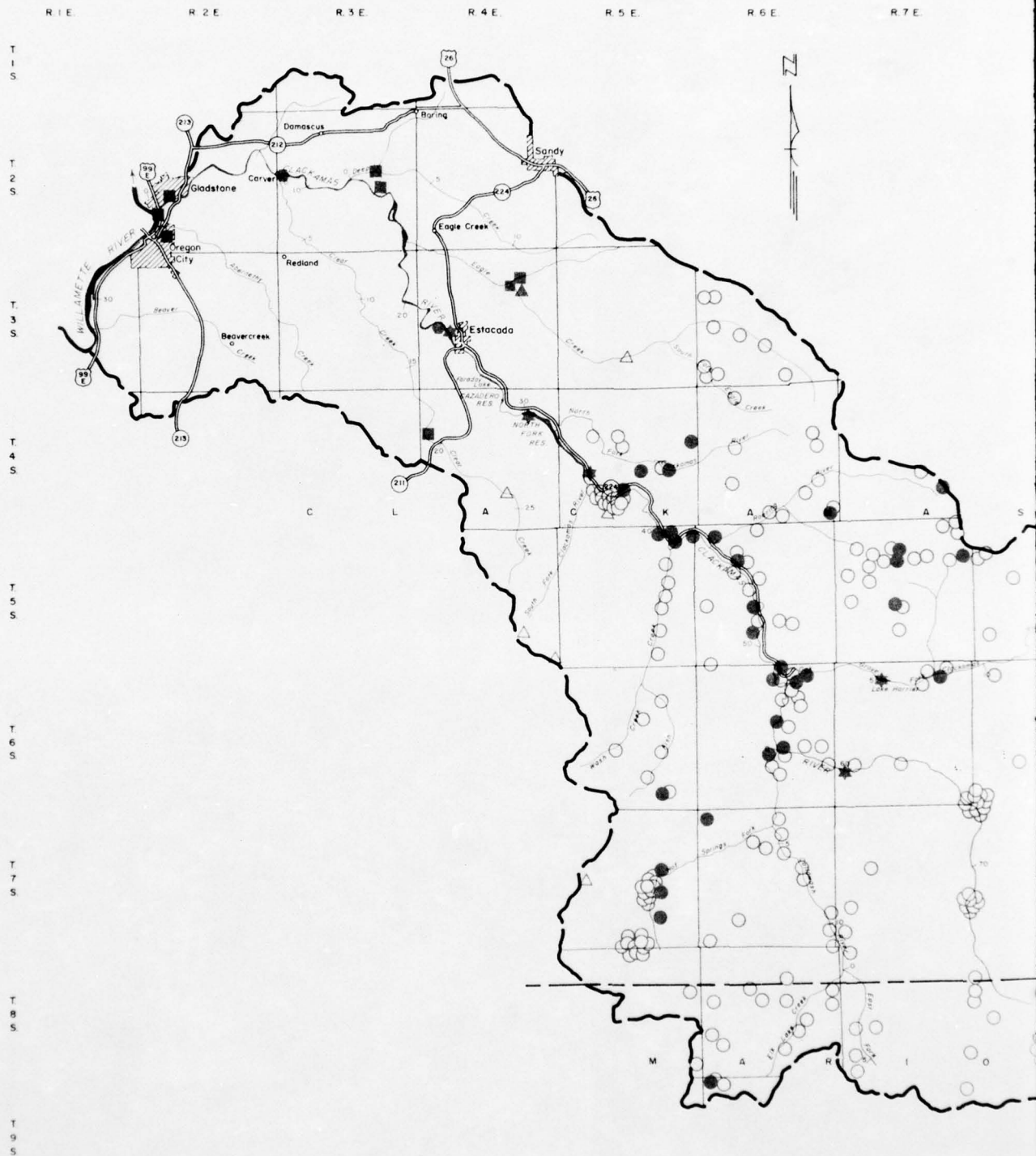
Streams in the national forest areas should remain free-flowing so far as possible, to maintain the recreation resource. Minimum flows should be established at a level consistent with fishery needs for the Clackamas River and major tributaries. Level of water should be adequate to maintain natural beauty in streams adjacent to major travel routes. Recommended minimum flows are:

<u>Stream</u>	<u>River Mile Location</u>	<u>Recommended flow (cubic feet/second)</u>
Clackamas River	65.1	240
Clackamas River	23.1	800
Clear Creek	0.1	110
Collawash River	0.1	250
Hot Springs Fork	0.1	75
Eagle Creek	0.1	125
Oak Grove Fork	0.1	60
Roaring River	0.1	100
South Fork, Clackamas River	0.1	75



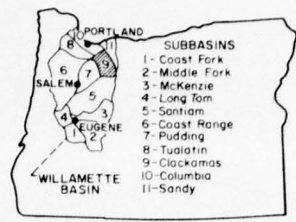
Photo A-23 Timothy Lake is a favorite outdoor recreation attraction with the Clackamas Subbasin. (O.S.H.D. Photo)

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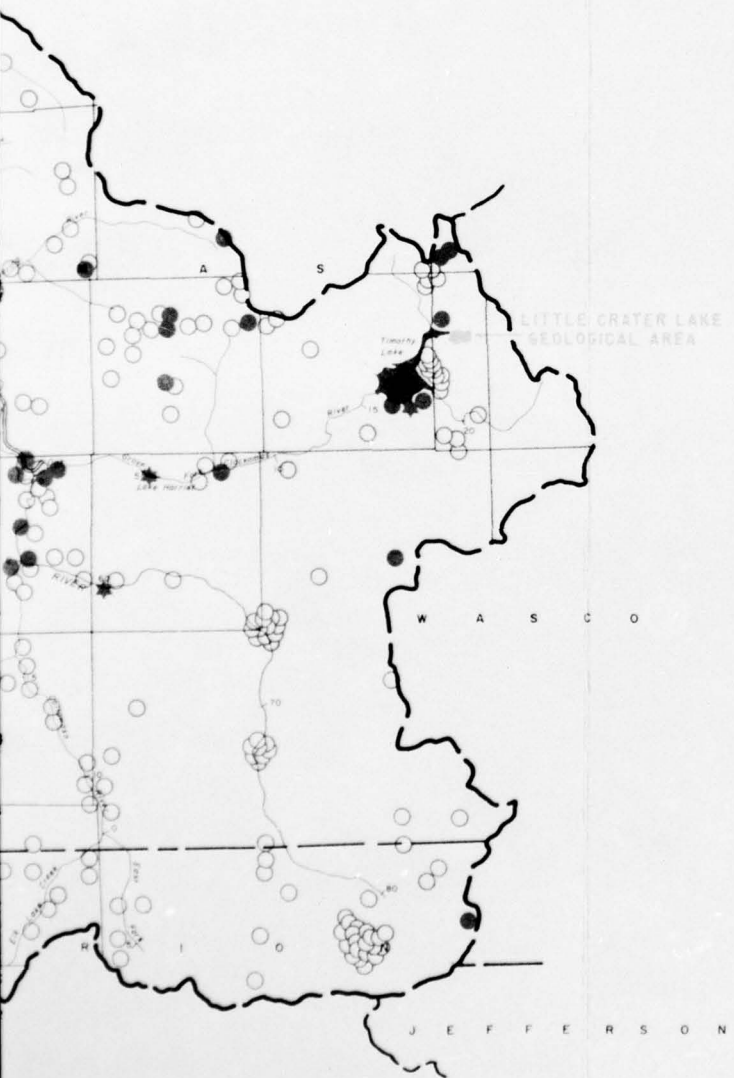


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KEY MAP
SHOWING SUBBASINS



LEGEND

RECREATION SITES EXISTING POTENTIAL

U.S. Forest Service	●	○
State of Oregon	●	○
Bureau of Land Management	▲	△
Corps of Engineers	◆	◇
City - County	■	□
Private	★	☆
Special Dedicated Areas	■	

CLACKAMAS SUBBASIN WILLAMETTE BASIN, OREGON RECREATION SITES

MARCH 1967



SUBBASIN 10 - COLUMBIA

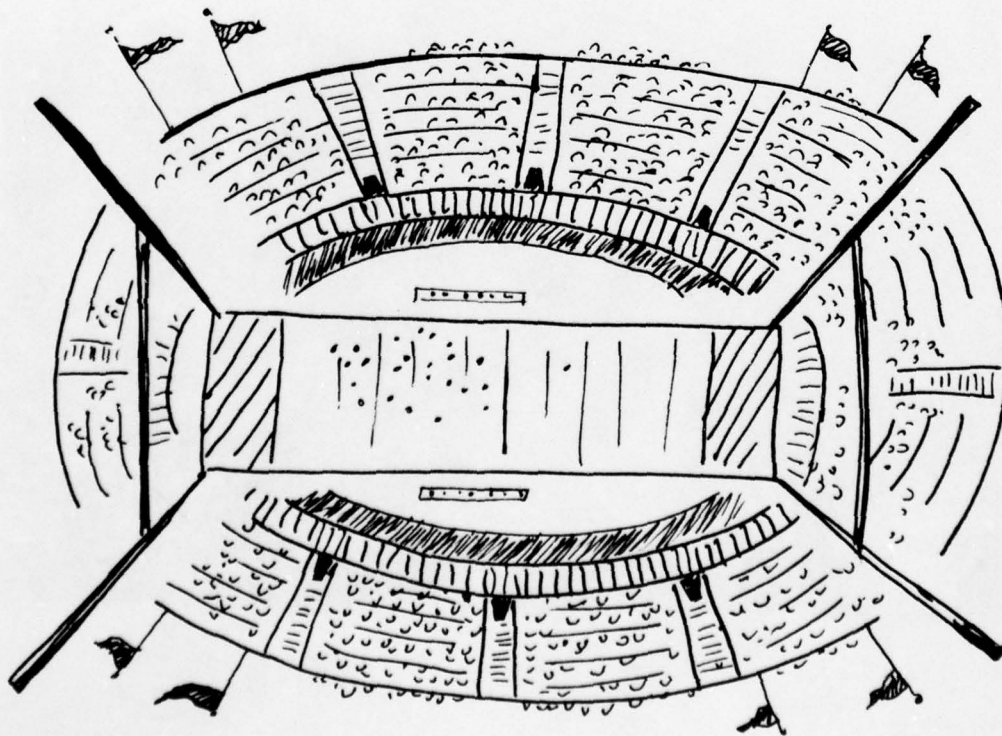
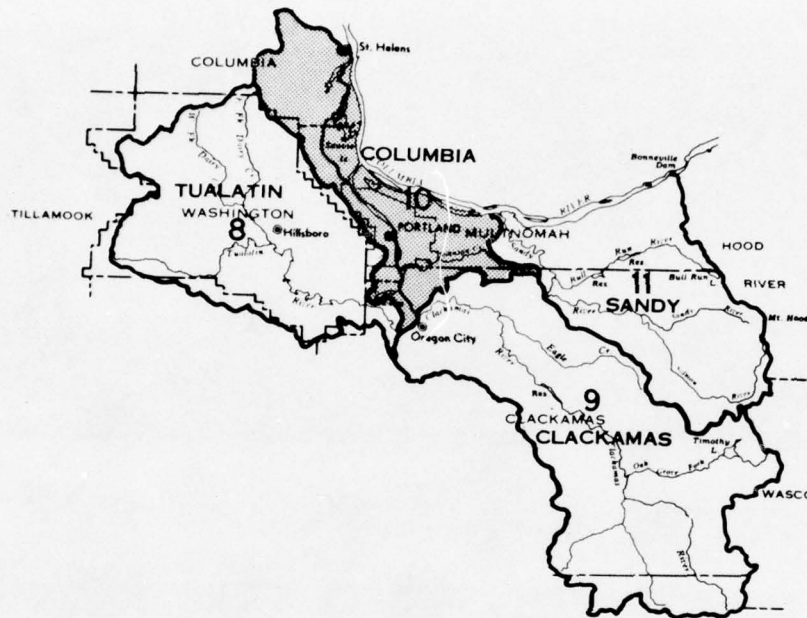




Photo A-24 The Columbia Subbasin contains nearly 1,500 people per square mile. (Port of Portland Photo)

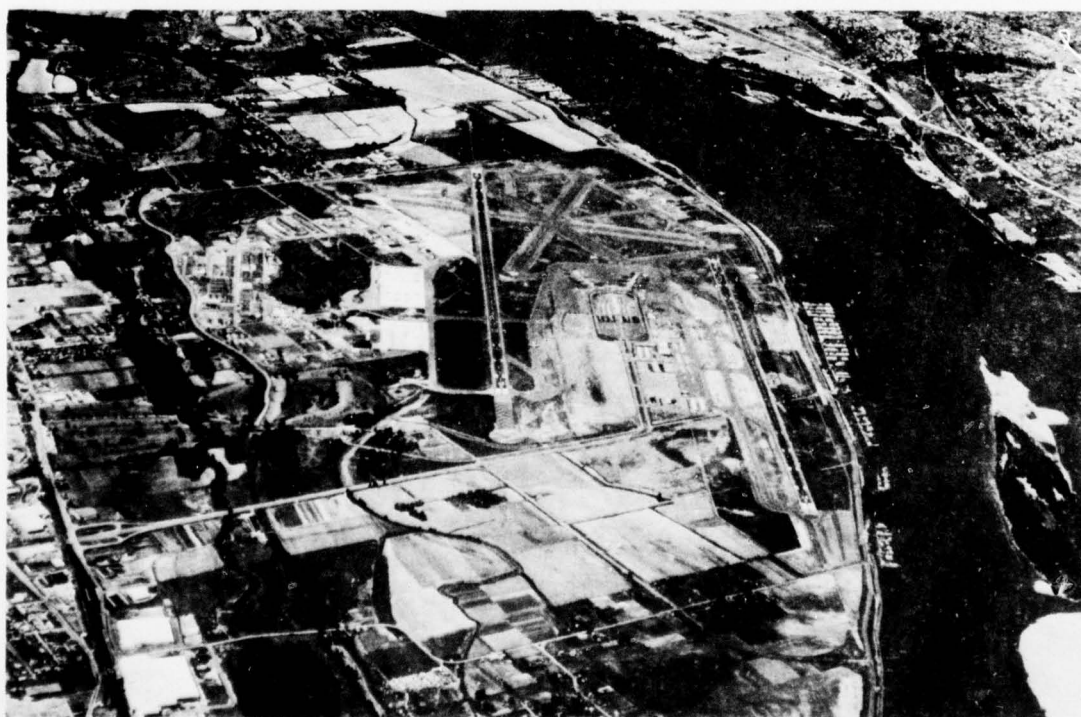


Photo A-25 There is good access throughout the subbasin by highway, rail, air, and water. (Port of Portland Photo)

SUBBASIN 10 - COLUMBIA

Description

The Columbia Subbasin, bisected from north to south by Willamette River, is largely urban and suburban areas associated with the Portland metropolitan area. Nearly all of Multnomah County and small sections of Washington, Columbia, and Clackamas Counties fall within the subbasin.

Topographically, the western portion is in sharp contrast to the rolling character of the eastern part. Most of the western area consists of a long, low ridge rising from an elevation of 20 feet along the Willamette River to elevations of 1,000 to 2,000 feet.

There are 431 square miles in the Columbia Subbasin, 53 percent of which are agricultural and forest land. The remaining 47 percent include residential and other urban development, associated service and industry, developed recreation areas, and lands owned or controlled by the Oregon State Game Commission.

Access

Automobile access is good to all parts of the subbasin. Interstate 5 bisects the subbasin from north to south, Interstate 80N and U. S. 99W from the southwest. U. S. 26 traverses the subbasin from northwest to southwest.

Not only is the interior easily accessible, but the subbasin itself is well served by rail, air, and water. Portland has an international airport and an inland seaport of international significance and serves as an important railroad terminus.

Population and Economy

The 1960 population was 562,250, a density of nearly 1,305 per square mile.

Projected population

<u>Year</u>	<u>Resident Population</u>	<u>Density Per Square Mile</u>	<u>Participating Population</u>
1980	809,300	1,890	213,584
2000	1,141,100	2,666	300,114
2020	1,776,700	4,151	533,161

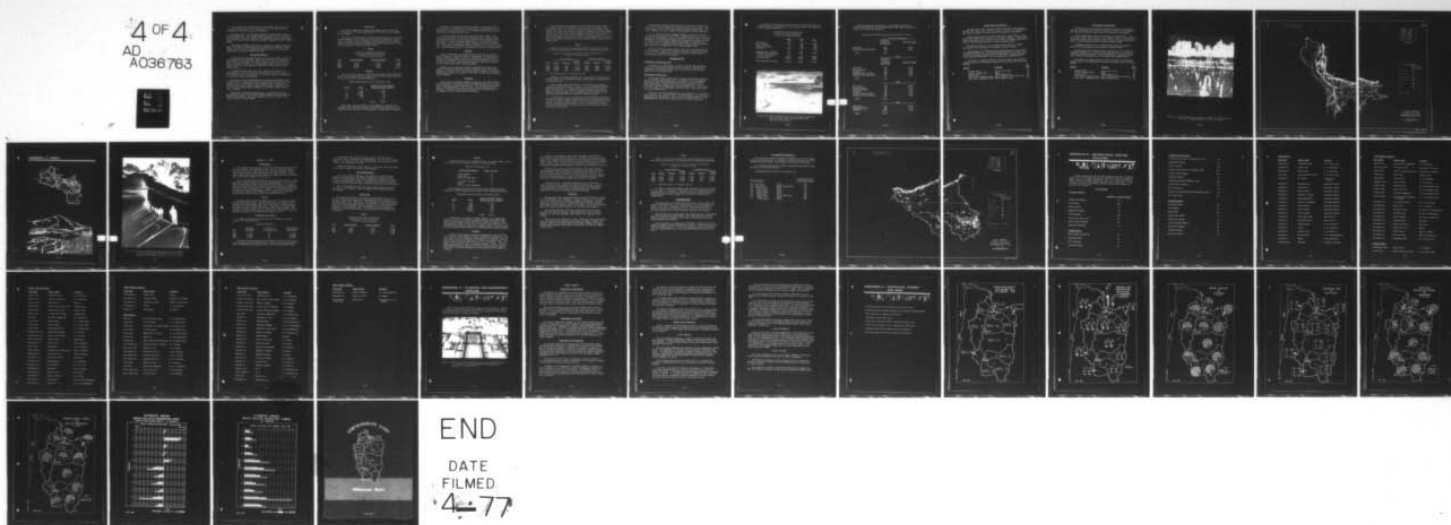
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PACIFIC NORTHWEST RIVER BASINS COMMISSION VANCOUVER WASH F/6 8/6
THE WILLAMETTE BASIN COMPREHENSIVE STUDY OF WATER AND RELATED L--ETC(U)
1969

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The extremely low participation by the resident population indicates that the majority of the residents seek all or part of their recreational activities outside the subbasin.

The population of the Columbia Subbasin is concentrated within the Portland urban area. The largest number of employees are in the residency industries services category, with laborers, construction workers, manufacturing, and other industrial personnel forming the second largest group.

The Columbia Subbasin population is expected to double by the year 2020. The amount of agricultural land is expected to diminish rather sharply in the future as residential expansion can only occur on the agricultural and forest lands to the east.

Recreation Features

The Columbia and Willamette Rivers are the most significant recreation features in the subbasin. There are some 45 miles of Columbia River shoreline included. Few public facilities exist on either river within the subbasin, however. The Multnomah Channel and the Columbia River islands are other recreation features offering water-related opportunities.

Portland's Forest Park, one of the largest city parks in the United States, is 7-1/2 miles long and contains almost 4,000 acres in the northwest part of the subbasin. It receives light use, perhaps due to a lack of facility development.

Blue Lake, a county-owned park in the extreme northeastern corner, contains the only major developed slack water readily available to the general public. Lake Oswego, in the southern part, provides water-oriented recreation for the residents living directly adjacent to the lake or having limited access easements to the water; general public use is limited.

Mount Tabor Park and Washington Park, in conjunction with the Portland Zoo, fulfill much of the subbasin nonwater-oriented urban park and recreation demand. The city playground system also bears a substantial portion of this demand.

Present Use

The 1963 recreation use within the subbasin totaled 4,956,273 recreation-days. The great preponderance of visits were by residents of the subbasin.

The use of this subbasin's recreation resources to date by out-of-State travelers or other tourists is of minimal importance. There is almost a complete lack of overnight facilities within this subbasin except for hotels, motels, and commercial trailer parks, none of which are associated with outdoor recreation areas.

Demand

*Estimated Demand for Water-Related
and Nonwater-Related Activities
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>	<u>Nonwater-Related</u>	<u>Total</u>
1980	3,592	1,897	5,489
2000	6,026	3,165	9,191
2020	12,839	6,488	19,327

Capacity

There are 57,325 acres of classified recreation land in this subbasin. The nonwater-related capacity of these lands by BOR Classification is shown in the following tabulation:

Classified recreation land by BOR Class, 1963

<u>Class</u>	<u>Acres</u>	<u>Nonwater-Related Capacity (Recreation-Days 1,000's)</u>
I	1,119	3,355
II	2,190	546
III	53,389	53
IV	250	25
VI	2	6
Total		3,985

Only about 30 to 36 percent of the subbasin is available for recreation use. The major portion of this available land lies in the northwest portion and could be well adapted to recreation development.

Although the quantity of recreation land is sufficient at the present time, its distribution and development do not adequately meet the needs. The greatest deficit is in nonurban development, particularly for water-oriented activities.

Private moorages and moorings along with several public boat-launching ramps permit access to the Columbia River. However, these access points provide only launching facilities and parking for cars and trailers. There is limited opportunity for other water-related activities. Blue Lake Park has nearly reached the point of maximum use. On holidays and weekends during the summer, it is filled to capacity. Water-related capacity in the subbasin is 850,000 recreation-days.

Problems

Both the Willamette and Columbia River shorelands are mostly in private ownership. This decreases the opportunity for development of public facilities somewhat. However, considerable potential exists through encouragement of private recreation developments and some public land acquisition. Heavy industrialization of portions of these rivers detracts from their recreation appeal.

Highway construction has removed considerable waterfront from possible recreation development and has withdrawn other lands from waterfront recreation use. Insufficient public support of recreation programs has probably contributed to the lack of recreation opportunity in the subbasin.

Potential

Even though the Columbia Subbasin contains no outstanding recreation attractions, it nevertheless has considerable potential for water-related outdoor recreation opportunities. The Columbia and Willamette Rivers, Multnomah Channel, Sauvie Island, and other Columbia River Islands, if properly planned and developed, can help satisfy much of the subbasin need for water-related recreation.

The satisfaction of nonwater-related recreation demand within this subbasin may be more difficult to attain than for water-oriented recreation. There are, however, several potential sites which could supply a portion of the recreation demand. Proposed sites would include Powell Butte, Grant Butte, Mount Sylvania, Rocky Butte, and the Nehalem Divide area west and south of St. Helens, the largest single area. The Nehalem Divide area probably offers the best opportunity for development of overnight facilities, which this subbasin totally lacks at the present time.

Needs

Based on the previous capacity and demand calculations, the subbasin needs and surpluses are summarized in the following tabulation:

*Summary of surplus and need for outdoor recreation 1/
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>			<u>Nonwater-Related</u>		
	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>
1980	3,592	850	- 2,742	1,897	3,985	+2,088
2000	6,026	850	- 5,176	3,165	3,985	+ 820
2020	12,839	850	-11,989	6,488	3,985	-2,503

1/ (-) indicates need, (+) indicates surplus

Although the Columbia Subbasin has a great deal of available water surface, much of it is presently unsafe, undesirable, or inaccessible for recreation use.

Class I lands should satisfy most of the demand for nonwater-related recreation activities. However, since the subbasin contains much Class III land, a portion of this land should be reserved for future recreational use. Lands for nonwater-related activities are adequate to meet the needs in the Columbia Subbasin through the year 2000. An additional 835 acres would be required by 2020.

The 1962 report of the Portland Metropolitan Planning Commission, "Recreation Outlook," gives a good indication of the planning necessary to meet the urban recreation demand in the Portland Metropolitan Area. By 1975, according to that report, it will be necessary to acquire twice the present amount of recreation land, and development should be increased by 185 percent.

Development of water-related resources is the most pressing need in the area. Private lands can satisfy a portion of this need. Much of the demand will be met by the Willamette and Columbia Rivers. However, a deficit will still remain to be satisfied by other subbasins.

It is doubtful that the Columbia Subbasin will be able to meet recreation needs beyond the year 2000. Nonwater-related activities can probably be accommodated, with the exception of winter sports, driving, and hiking. An accelerated swimming pool development program could in all likelihood meet swimming demand through 2020. Nonwater-related activities such as demand for driving and hiking will become more and more difficult to accommodate as the urban community grows.

Much of the water-related need will have to be satisfied outside of the subbasin. Large-scale pollution abatement programs and better access must be provided before full realization of the potential at existing water sites can be attained.

Recreation Plan

Improvement of Existing Areas

Enlargement and improvement of some of the existing recreation sites can aid in meeting current recreation demand. Expansion and improvement of Blue Lake, Forest Park, and Kelly Point Park offer perhaps the best opportunities.

Development of New Areas

The Columbia River Islands have recreation development potential. Use of Lemon and Sand Islands may be pre-empted if the contemplated expansion of the Portland International Airport into the Columbia River materializes. Slack-water recreation opportunity could be developed at Smith and Bybee Lakes in the Peninsula area. These lakes lie in the midst of the Rivergate Industrial area. They would serve the north Portland area.

Because of the rapid urbanization of the subbasin, it is increasingly important for city and county park departments to accelerate their programming and development. Close liaison is needed between the two departments in order to make maximum use of recreation resources.

The estimated capacities of new areas and the existing areas following expansion and improvement of the existing supply are indicated in the following tabulation:

*Estimated recreation capacity for
proposed development program
(1,000's of recreation-days)*

	<u>1980</u>	<u>2000</u>	<u>2020</u>
West Delta	500	750	1,500
Mount Sylvania	75	150	150
Nehalem Division	-	182	790
Peninsula	250	525	2,250
Columbia River Islands	250	1,000	3,500
Expansion and Improvement of Existing Areas	500.7	750	1,667
Existing Supply	<u>4,835</u>	<u>4,835</u>	<u>4,835</u>
Total Annual Visitation	6,410.7	8,192	14,692



*Photo A-26 Smith and Bybee Lakes in the Rivergate Industrial Area have slack-water recreation potential.
(Port of Portland Photo)*

Unit-day values for recreation in the Columbia Subbasin for initial development and for the target years 1980, 2000, and 2020 are shown in the following tabulation:

Summary of recreation plan for water-related activities

	<u>Initial Development</u>	
	<u>Visitation</u>	<u>Unit Day Value</u>
	<u>(1,000's)</u> <u>(rec.-days)</u>	
West Delta	300	\$0.90
Expansion and Improvement	<u>325</u>	0.60
Total	625	
<hr/>		
	1980	
	<u>Incremental</u>	
	<u>Visitation</u>	<u>Unit Day Value</u>
	<u>(1,000's)</u> <u>(rec.-days)</u>	
West Delta	200	\$0.90
Mount Sylvania	75	0.75
Peninsula	250	0.90
Columbia River Islands	250	0.90
Expansion and Improvement	<u>176</u>	0.90
Total	951	
<hr/>		
	2000	
West Delta	250	\$0.90
Mount Sylvania	75	0.75
Nehalem Division	182	0.90
Peninsula	275	0.90
Columbia River Islands	750	0.75
Expansion and Improvement	<u>250</u>	0.90
Total	1,782	
<hr/>		
	2020	
West Delta	750	\$0.75
Nehalem Division	608	0.90
Peninsula	<u>1,725</u>	0.90
Total	3,083	

Preservation of Resources

Satisfaction of the recreation demand, both water- and nonwater-related, will depend upon effective zoning to control the urbanization and industrialization of lands needed for recreation development.

Scenic values have already been impaired by urbanization. A few areas still remain which have been only lightly touched. Although these do not have great scenic splendor, they do have a pleasant rural character, a part of which should be retained through zoning.

Recreation resources, such as Forest Park, should be further protected by the acquisition of additional adjacent lands.

Preservation of recreational water resources does not mean maintaining the status quo. Pollution abatement measures, in order to reclaim the recreation resource, must be undertaken. Adequate minimum flows should be maintained on the Willamette and Columbia Rivers.

To preserve recreation values in certain streams, the following minimum flows to be maintained during the recreation season are recommended:

<u>Stream</u>	<u>Location</u>	<u>Cfs Flow</u>
Johnson Creek	(river mile 10.2)	25
Crystal Springs Creek	Mouth	15
Milton Creek	Above Salmon Creek	25
North Fork, Scappoose Creek	Above confluence with South Fork	40
South Fork, Scappoose Creek	Above Raymond Creek	25

Preservation of Resources

Satisfaction of the recreation demand, both water- and nonwater-related, will depend upon effective zoning to control the urbanization and industrialization of lands needed for recreation development.

Scenic values have already been impaired by urbanization. A few areas still remain which have been only lightly touched. Although these do not have great scenic splendor, they do have a pleasant rural character, a part of which should be retained through zoning.

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Crystal Springs Creek	Mouth	15
Milton Creek	Above Salmon Creek	25
North Fork, Scappoose Creek	Above confluence with South Fork	40
South Fork, Scappoose Creek	Above Raymond Creek	25



Photo A-27 Blue Lake Park is high density outdoor recreation area with within the Columbia Subbasin. (U.S.B.O.R. Photo)

Prepared By
 WILLAMETTE BASIN TASK FORCE
 of the
 PACIFIC NORTHWEST RIVER BASINS COMMISSION

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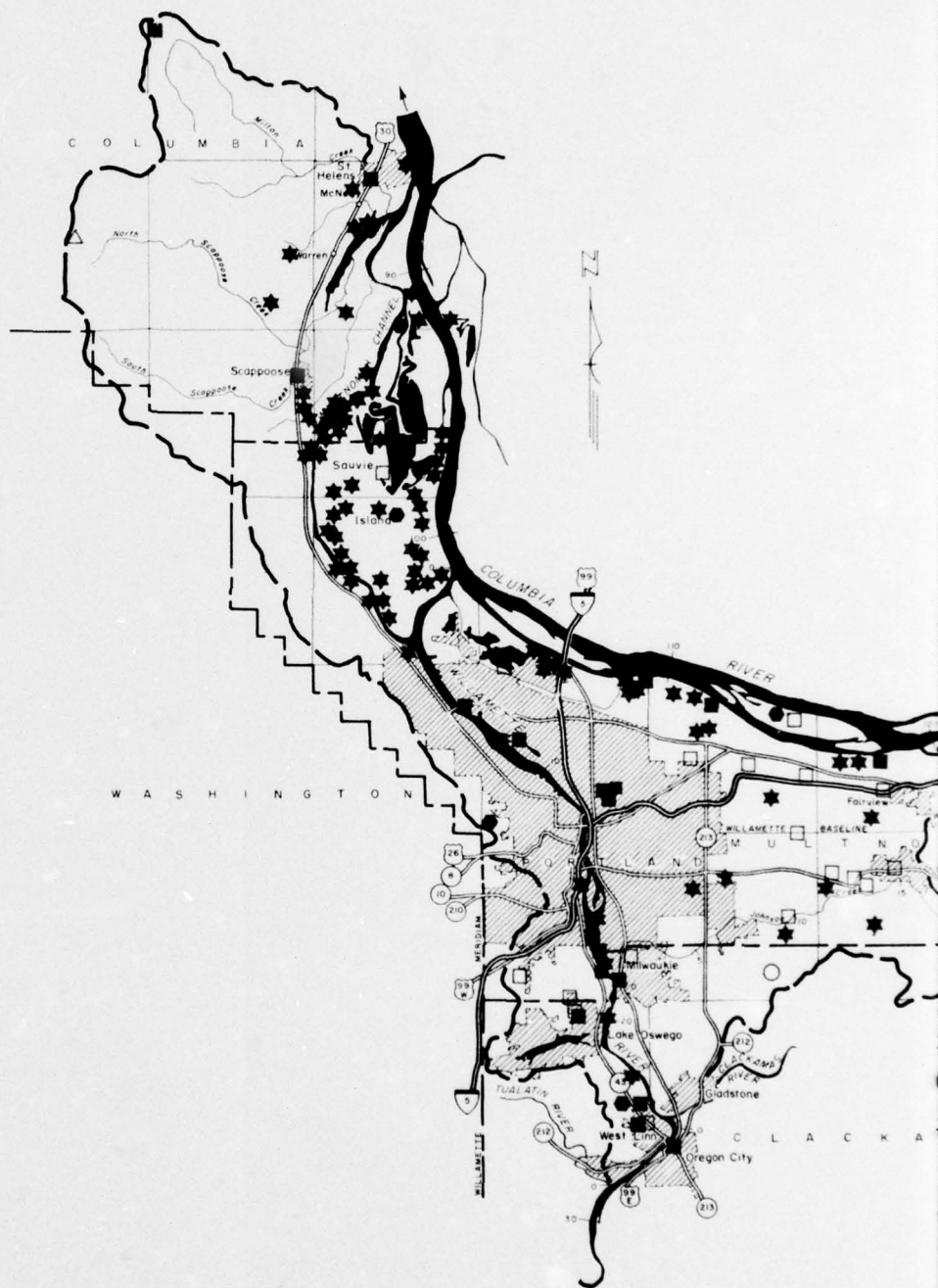
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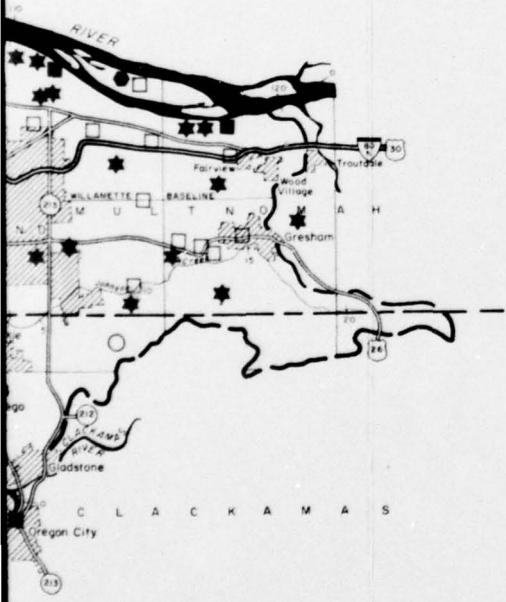
KEY MAP
SHOWING SUBBASINS

LEGEND

RECREATION SITES
EXISTING POTENTIAL

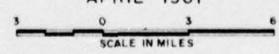
U.S. Forest Service	●	○
State of Oregon	●	○
Bureau of Land Management	▲	△
Corps of Engineers	◆	◇
City - County	■	□
Private	★	☆

Special Dedicated Areas



COLUMBIA SUBBASIN WILLAMETTE BASIN, OREGON RECREATION SITES

APRIL 1967



SUBBASIN 11 - SANDY

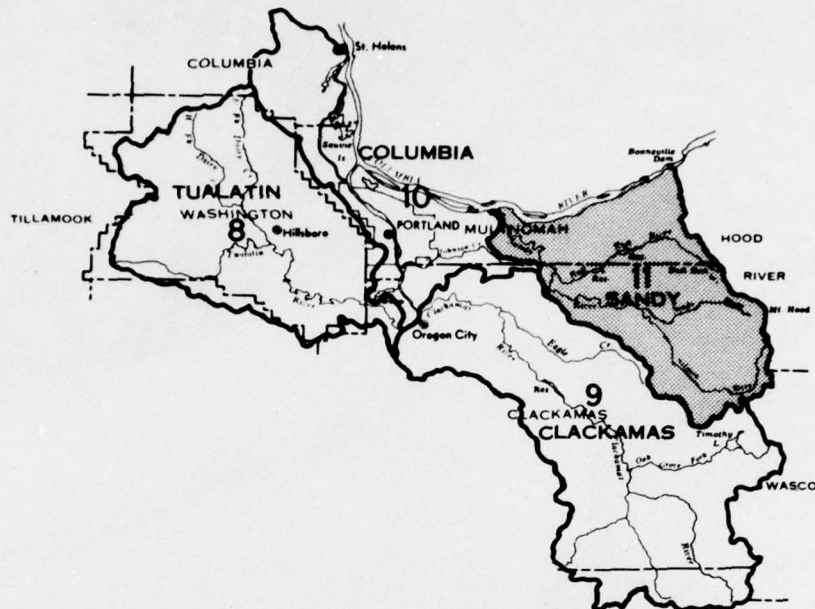




Photo A-28 Mt. Hood dominates the Sandy Subbasin. The mountain is visited by thousands of hikers, climbers, skiers, campers and sightseers each year. (U.S.F.S. Photo)

SUBBASIN 11 - SANDY

Description

This subbasin lies directly east of the Willamette River and metropolitan Portland. The Sandy River flows directly into the Columbia River near Troutdale. Main tributaries, all with headwaters in the Cascade Range, are the Bull Run, Zigzag, and Salmon Rivers. Several small streams which flow directly into the Columbia are also considered part of the Sandy Subbasin in this study.

Most of the moisture that provides the water supply for this system falls on the upper reaches of these main tributaries. Glaciers on Mt. Hood form the Sandy, Zigzag, and Salmon River headwaters. The upper Sandy contributes most of the glacial silt which gives it its name and character. About 70 percent of the subbasin is in Clackamas County and the remainder in Multnomah County. Forests cover about 90 percent of the 582 square miles of the subbasin. The remaining 10 percent is divided about equally between agriculture and other uses.

Access

The only route through the interior is U. S. 26, much of it along the historic Barlow Trail. Interstate 80N skirts the northern edge through the Columbia Gorge along the Columbia River. The western part has many miles of secondary rural roads. Parts of the Sandy and Bull Run River drainages contain excellent all-weather gravel roads. The headwaters of the Columbia Gorge streams, parts of the upper Sandy River and the Salmon River, are inaccessible except by trail.

Population and Economy

In 1960, 9,700 people lived in the Sandy Subbasin, an average density of 17 per square mile.

Projected population

<u>Year</u>	<u>Resident Population</u>	<u>Density Per Square Mile</u>	<u>Participating Population</u>
1980	10,400	18	51,500
2000	14,600	25	72,400
2020	22,800	39	106,700

The high participating population indicates that many of the users of the subbasin are not residents there. Most of these outside visitors come from the Portland metropolitan area and nearby Washington State.

At present, about half the people live in the small towns of Troutdale, Sandy, Brightwood, and Rhododendron. The rest live in rural areas. It is expected that about three-quarters of the people will be living in the urban areas by 2020.

Municipal watersheds, forest products, recreation, and agriculture are the main economic activities in the subbasin.

Recreation Features

Most of the land is forested. The rugged tree-covered Cascade slopes and precipitous cliffs attract sightseers, campers, and picnickers. The high alpine areas on Mt. Hood provide wilderness and are also spectacular skiing country. Streamside areas offer fishing and excellent locations for new public and private recreational developments.

There are numerous natural lakes and streams, many of them with potential as yet untapped. This is perhaps the outstanding asset in the subbasin.

Present Use

The 1963 use was about 4.5 million recreation-days, about half on the Mt. Hood National Forest where sightseeing and winter sports predominate. Most of the other use is in State parks in the Columbia Gorge and at Bonneville Dam. Roslyn Lake, the forebay for a power-generating facility of Portland General Electric Company, is the heaviest-used water area in the subbasin. The secluded forest areas throughout the subbasin, both private and public, are highly prized for summer homes and cabins.

Demand

*Estimated demand for water-related
and nonwater-related activities
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>	<u>Nonwater-Related</u>	<u>Total</u>
1980	3,900	2,100	6,000
2000	4,950	2,550	7,500
2020	5,940	3,060	9,000

Capacity

Existing facilities are adequate to meet the present demand. More than 5,000 acres of recreation land have been developed.

Existing recreation sites

<u>Administering Agency</u>	<u>Number of Sites</u>
Forest Service	44
State Parks	14
County and Municipal	9
State Fish and Game	2
Private	2
Bureau of Land Management	1

The classified recreation land and resultant nonwater-related capacity, by BOR Classification is shown in the following tabulation:

Classified recreation land by BOR Class, 1963

<u>Class</u>	<u>Acres</u>	<u>Nonwater-Related Capacity (Recreation-Days 1,000's)</u>
I	991	2,973
II	3,388	847
III	73,519	147
IV	14,523	1,452
V	2,320	2
Total		5,421

In addition to the nonwater-related capacity, the subbasin has many miles of major streams; six large reservoirs with about 1,600 acres of water surface; three large natural lakes totaling 68 acres; and 26 smaller lakes. The portion of Columbia River adjacent to this subbasin contains nearly 2,000 acres of water surface. The total capacity of the water-related resource is 2,320,000 recreation-days annually.

Problems

A survey of the present recreation developments shows good diversity of facility types among the different administering agencies. However, there is less coordination among agencies on realistic subbasin priorities than would be desirable on a local or regional level. Each agency tends to develop those sites suited to the terrain. There is always a limitation on public and private capital. Public recreation developments should be based on cooperative accomplishment of goals, rather than on physical expediency or desirability from one agency's viewpoint.

Sewerage and sanitation systems are inadequate in the Zigzag, Rhododendron, and Government Camp areas. Piecemeal, unorganized expansion of this summer home and recreation area, both on private and public lands, has resulted in overloading of individual systems, which endangers public health. This situation in turn decreases the opportunity for progressive planning and development of first-class recreation facilities.

Vandalism and theft are serious problems in the Sandy Subbasin. Secluded summer cabins, nearness to metropolitan Portland, and heavily used recreation facilities combine to intensify this problem. The malicious destruction of public and private property ruins the quality of the recreation experience, raises costs, and creates public dangers when safety and directional warnings are needlessly destroyed.

The Bull Run municipal-supply watershed, with 1,450 acres of water surface, is not available for public recreation use. This exclusion of public recreation use is supported by local governments. The availability of water areas in this watershed for recreation purposes is a factor in long-term recreation planning.

Potential

Through small-pond construction and recreation-for-profit ventures, the lower reaches of the subbasin's forests on private land can supply much of the future need for fishing, wading, and swimming. Existing reservoirs and lakes, such as Trillium and Roslyn (already partially developed), contain expansion areas. Some areas, such as the Goodfellow Lakes, are small but have potential for recreation developments.

The existing Bull Run reservoirs and Bull Run Lake have good potential for water recreation. Future reservoirs, such as Blazed Alder Creek, will have potential when added to the municipal water system.

Much of the lower Sandy River, still undeveloped, and comparatively wild, has potential for greenway development for hiking, riding, and fishing. Many of the upper reaches of the Sandy, Zigzag, and Salmon Rivers have streamside zones which have potential for day-use organizational camps.

Needs

Based on the previous capacity and demand calculations, the sub-basin needs and surpluses are summarized in the following tabulation:

*Summary of surplus and need for outdoor recreation 1/
(1,000's of recreation-days)*

<u>Year</u>	<u>Water-Related</u>			<u>Nonwater-Related</u>		
	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>	<u>Demand</u>	<u>Capacity</u>	<u>Surplus or Need</u>
1980	3,900	2,320	-1,580	2,100	5,421	+3,321
2000	4,950	2,320	-2,630	2,550	5,421	+2,871
2020	5,940	2,320	-3,620	3,060	5,421	+2,361

1/ (-) indicates need, (+) indicates surplus

In order to satisfy the demand, more facilities for all activities will be needed. Considerable development must be accomplished on the Columbia River to increase the capacity for water-related activities. Additional water-surface acreage will be needed to satisfy water-related need.

Recreation Plan

The improvement of existing recreation areas, such as Benson and Rooster Rock State Parks, will enable better use of the Columbia and nearby water areas. Expansion of Roslyn Lake by Portland General Electric, Oxbow Park by Multnomah County, and Trillium Lake by the Mt. Hood National Forest would expand the immediate water supply.

Bull Run Lake and the proposed Linney Creek Reservoir could provide new water surface areas before 2000. After 2000, new small private ponds and municipal reservoirs in the Bull Run Watershed could also provide needed water surface.

Even if possible, it would not be desirable to develop all water surface acreage to maximum mathematical capacity. Certain quality needs must be satisfied as well. It will be necessary to keep some streams and lakes undeveloped or with only minimum developments to meet this need.

Preservation of Resources

The Sandy River should be managed to emphasize the river's rugged quality and sandy nature. It should be left in its natural state characterized by glacial wash, sandy beaches, and desolate stretches.

The historical Barlow Trail should be preserved and receive designation as an historical monument.

Recommended minimum flows for recreation are:

<u>Sandy Subbasin</u>		<u>Recommended flows</u> <u>(cubic feet/second)</u>
(2) Sandy River	Mouth	510
(2) Sandy River	Above Zigzag River	250
(2) Beaver Creek	Mouth	14
(2) Cedar Creek	Mouth	60
(2) Gordon Creek	Mouth	50
(2) Salmon River	Mouth	250
(2) Salmon River	Above South Fork	150
(2) Zigzag River	Mouth	200
Still Creek	Mouth	60

Prepared by
WILLAMETTE BASIN TASK FORCE
of the
PACIFIC NORTHWEST RIVER BASINS COMMISSION

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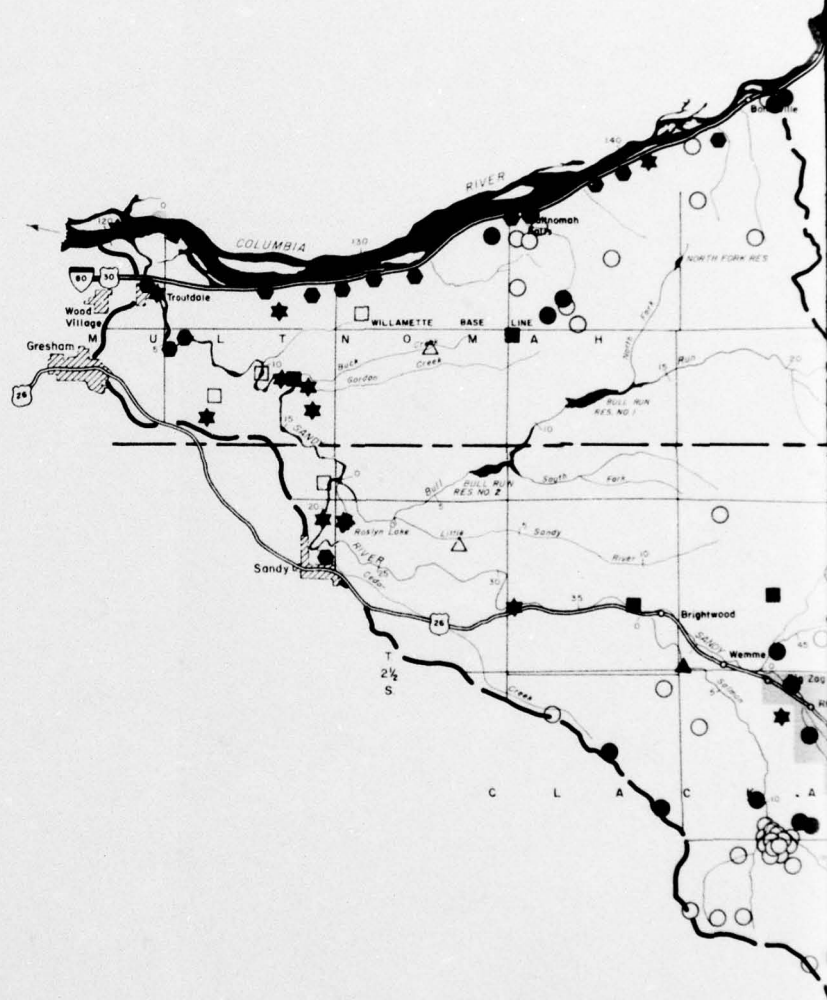
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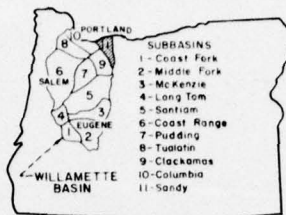
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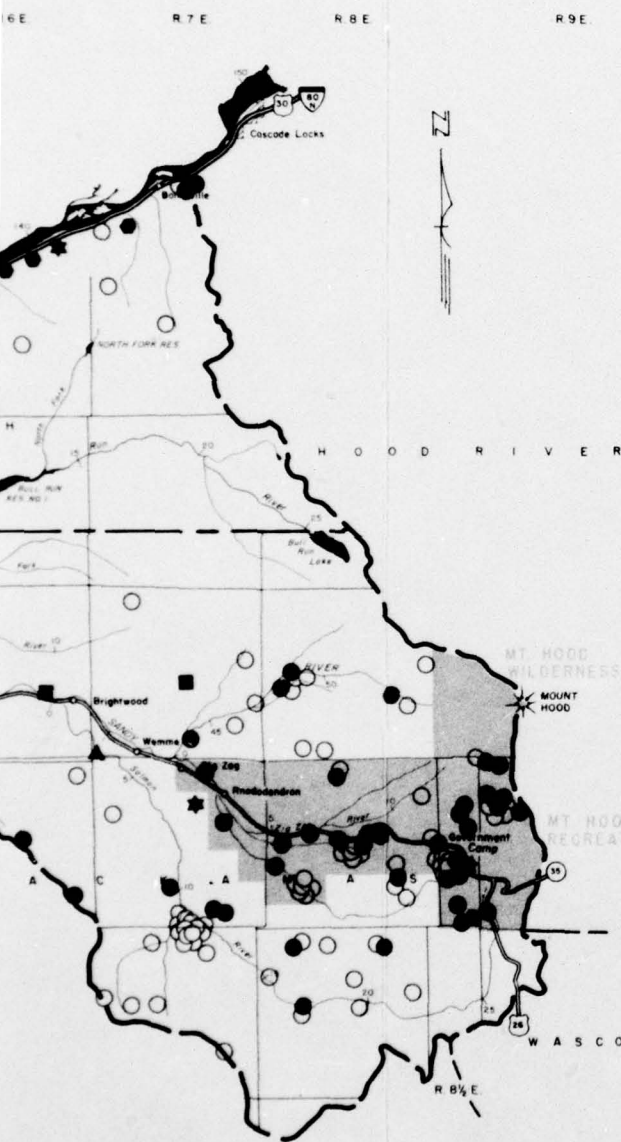
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KEY MAP
SHOWING SUBBASINS



LEGEND

RECREATION SITES EXISTING POTENTIAL

U.S. Forest Service	●	○
State of Oregon	●	○
Bureau of Land Management	▲	△
Corps of Engineers	◆	◇
City - County	■	□
Private	★	☆
Special Dedicated Areas	■	

SANDY SUBBASIN WILLAMETTE BASIN, OREGON RECREATION SITES

APRIL 1967



ADDENDUM B - RECREATIONAL BOATING FACILITIES



Willamette Basin has numerous boat moorages and ramps for general public use. The moorages are privately owned but cater to the general public, subject to space limitations. Most of the ramps are publicly owned, but a few privately owned ramps are open to the public. A list of these facilities is presented following; restricted moorages and ramps are not included.

Boat Moorages

Multnomah Channel

Average No. of Boats Moored

Bridgeview Moorage	25
Gay Moorage	200
Greg's Marina	70
Hageman's Moorage	50
Red's Moorage	250
Rocky Point Boat Basin	30
Sauvie Island Moorage	12
Willow Bar Moorage	10

Columbia River

Bart's Wharf and Marina	30
Big Eddy Marine	30
Bill's Moorage	70
Columbia Moorage	50

Columbia River (Cont'd)

Columbia River Yacht Club (Members only)	110
Donaldson's Marina	95
Dick's Moorage	40
Hayden Island Yacht Club (Members only)	100
Jantzen Beach Moorage	625
McCuddy's Marina	12
Portland Yacht Club (Members only)	145
River Drive In Marina	65
De Fir's Marina	20
Tauscher's, Corinthian Marina (Sailboats only)	40
Tyee Yacht Club	110

Willamette River

Anchorage Marina	135
Linn Moorage	45
Marina West	24
Midway Boat Service	10
Oregon City Marina	25
Sellwood Bridge Marina	30
Sportcraft Landing	25
Standard Moorage	36
Totem Pole Marina	40

Lower Subarea

<u>Water Body</u>	<u>Name of Ramp</u>	<u>Location</u>
Clackamas R.	Clackamette Park	N. of Oregon City
Clackamas R.	Carver Park	E. of Gladstone
Clackamas R.	Barton Park	E. of Gladstone
Clear Lake	Clear Lake For. Camp	S. of Gov't Camp
Columbia R.	St. Helens	"Parks Port" in City
Columbia R.	Scappoose Bay	Multnomah Channel
Columbia R.	Coon Island	Multnomah Channel
Columbia R.	Gilbert River	Multnomah Channel
Columbia R.	Johnson's Landing	Multnomah Channel
Columbia R.	Burlington Ferry	Multnomah Channel
Columbia R.	Rocky Point Moorage	Multnomah Channel
Columbia R.	Janes Moorage	Multnomah Channel
Columbia R.	Gay's Landing	Multnomah Channel
Columbia R.	Greg's Marina	Multnomah Channel
Columbia R.	43rd Avenue Ramp	Marine Drive
Columbia R.	Big Eddy Marina	Marine Drive
Columbia R.	Sundial Beach	N. of Troutdale
Columbia R.	Corbett	E. of Troutdale
Columbia R.	Rooster Rock	E. of Corbett
Columbia R.	Dalton Point	W. of Multnomah Falls
Columbia R.	Dodson	Below Bonneville
Estacada Lake	Dam Ramp	Northwest Estacada

Lower Subarea (Cont'd)

<u>Water Body</u>	<u>Name of Ramp</u>	<u>Location</u>
Harriet Res.	Harriet Lake Campground	E. of Estacada
North Fork Res.	Promontory Park	Southeast of Estacada
Sandy River	Lewis & Clark State Park	Freeway at Troutdale
Sandy River	Oxbow Park	Hossner Road
Sandy River	Gordon Creek	E. of Springdale
Sturgeon Lake	Sauvie Island	N. of Portland
Timothy Lake	Hoodview Camp	S. of Government Camp
Timothy Lake	Gone Creek Camp	S. of Government Camp
Timothy Lake	Oak Fork Campground	S. of Government Camp
Trillium Lake	Trillium Lake Campground (E. Shore)	E. of Government Camp
Willamette R.	St. John's Landing	N. E. of Portland
Willamette R.	Swan Island	N. E. Portland
Willamette R.	Willamette Park	W. Bank N. of Sellwood Br.
Willamette R.	Sellwood Ramp	E. End of Sellwood Br.
Willamette R.	Staff Jennings	W. End of Sellwood Br.
Willamette R.	Milwaukie Ramp	Milwaukie
Willamette R.	River Villa Acres	Oak Grove
Willamette R.	Oswego City Park	Oswego
Willamette R.	Cedar Island	South of Oswego
Willamette R.	West Linn Park	Mouth of Tualatin R.
Willamette R.	Clackamette Park	N. of Oregon City

Middle Subarea

Breitenbush Lake	Guard Station	N. of Detroit
Detroit Res.	Detroit Lake State Park	E. of Detroit Dam

Middle Subarea (Cont'd)

<u>Water Body</u>	<u>Name of Ramp</u>	<u>Location</u>
Detroit Res.	Snider's Resort	W. of Detroit
Detroit Res.	Detroit Lake Resort	W. of Detroit
Detroit Res.	Old Townsite	Detroit
Detroit Res.	Detroit Lake State Park	Mongold Area
Detroit Res.	Hoover Forest Camp	Blowout Road
Detroit Res.	S. Shore Forest Camp	Blowout Road
Elk Lake	Elk Lake Campgrounds	N. of Detroit
Foster Res.	Gedney Ramp	E. of Sweet Home
Foster Res.	Public Access	E. of Sweet Home
Foster Res.	Sloughside Access	E. of Sweet Home
Freeway Lake No. 1	Grande Prairie Road	S. of Albany
Freeway Lake No. 2	Grande Prairie Road	S. of Albany
Green Peter Res.	Public Access	Quartzville
Mission Lake	Public Area	North of Salem
McBee Lake	(Whitaker)	S. of Corvallis
Santiam River	Jefferson Jct. Rest Area	North of Albany
Santiam River	Jefferson Site	North of Albany
Willamette R.	Wilsonville Ferry	Wilsonville
Willamette R.	Newberg Ramp	S. of Newberg
Willamette R.	San Salvador	W. of St. Paul
Willamette R.	Wheatland	West of Brooks
Willamette R.	Wallace Park	W. of Salem
Willamette R.	Taylor's Marina	W. of Salem
Willamette R.	Ferry Landing	Across from Independence
Willamette R.	Buena Vista Ferry	S. E. of Independence

Middle Subarea (Cont'd)

<u>Water Body</u>	<u>Name of Ramp</u>	<u>Location</u>
Willamette R.	Bryant Park	Albany
Willamette R.	Corvallis Ramp	Corvallis at Bridge
Willamette R.	Marys River Ramp	Mouth of Marys River
Willamette R.	Peoria	S. of Corvallis
Yamhill R.	Dayton Ramp	At Dayton

Upper Subarea

Big Lake	Big Lake Forest Camp	S. of Santiam Pass
Carmen Res.	Ice Cap Creek	S. of Santiam Jct.
Clear Lake	Clear Lake For. Camp (N.End)	S. W. Santiam Jct.
Clear Lake	S. Shore Access	S. W. Santiam Jct.
Dorena Res.	Harms Park (N. Shore)	E. of Cottage Grove
Dorena Res.	Baker Bay	E. of Cottage Grove
Dorena Res.	Bake Stewart Park (E.Shore)	E. of Cottage Grove
Fall Creek Res.	Big Fall Creek (N. Shore)	E. of Eugene
Fall Creek Res.	Winberry Creek	E. of Eugene
Fern Ridge Res.	Richardson Point	N. W. of Eugene
Fern Ridge Res.	Orchard Point No. 1	N. W. of Eugene
Fern Ridge Res.	Orchard Point No. 2	N. W. of Eugene
Fern Ridge	Perkin's Point	W. of Eugene
Gold Lake	Gold Lake Campground	N. E. of Oakridge
Hills Creek Res.	Hills Creek Arm	S. of Oakridge
Hills Creek Res.	Packard Creek	S. of Oakridge

Upper Subarea (Cont'd)

<u>Water Body</u>	<u>Name of Ramp</u>	<u>Location</u>
Hills Creek Res.	Willamette Arm	S. of Oakridge
Lookout Point Res.	Black Canyon Forest Camp	W. of Oakridge
Lookout Point Res.	Hampton Landing	E. of Eugene
Lookout Point Res.	Signal Point (N. Shore)	E. of Eugene
Lookout Point Res.	Landax Landing (N. Shore)	E. of Eugene
Lost Lake	Lost Lake Campground	E. of Santiam Jct.
McKenzie R.	Armitage St. Park	N. E. of Eugene
McKenzie R.	Hayden Bridge	N. of Springfield
McKenzie R.	Bellinger Landing	N. E. of Springfield
McKenzie R.	Hendrick's State Park	E. of Springfield
McKenzie R.	Emmerick Landing	E. of Springfield
McKenzie R.	Leaburg Ramp	Leaburg
McKenzie R.	Dorris State Park	E. of Vida
McKenzie R.	Rennie Landing	E. of Vida
McKenzie R.	Silver Creek Landing	W. of Nimrod
McKenzie R.	Shepard's Landing	At Nimrod
McKenzie R.	McMullen Landing	At Nimrod
McKenzie R.	Finn Rock Landing	E. of Nimrod
McKenzie R.	Forest Glenn	E. of Blue R.
McKenzie R.	Redsides Landing	E. of Blue R.
Smith R. Res.	No. 3	S. of Santiam Jct.
Trail Bridge R.	No. 2	S. of Santiam Jct.
Waldo Lake	Boat Access	N. W. of Lapine
Willamette R.	Harrisburg Ramp	In Harrisburg

Upper Subarea (Cont'd)

<u>Water Body</u>	<u>Name of Ramp</u>	<u>Location</u>
Willamette R.	Brown's Landing	S. of Junction City
Willamette R.	Ferry St. Park	In Eugene
Willamette R. Mid. Fork	Dexter Dam	Below Dam, S. E. of Eugene

ADDENDUM C - PLANNING AND MANAGEMENT AGENCIES



There are more than 20 Federal, State, and local agencies involved in outdoor recreation planning and management in the Willamette Basin. This addendum presents a brief summary of the activities of the major agencies involved in outdoor recreation.

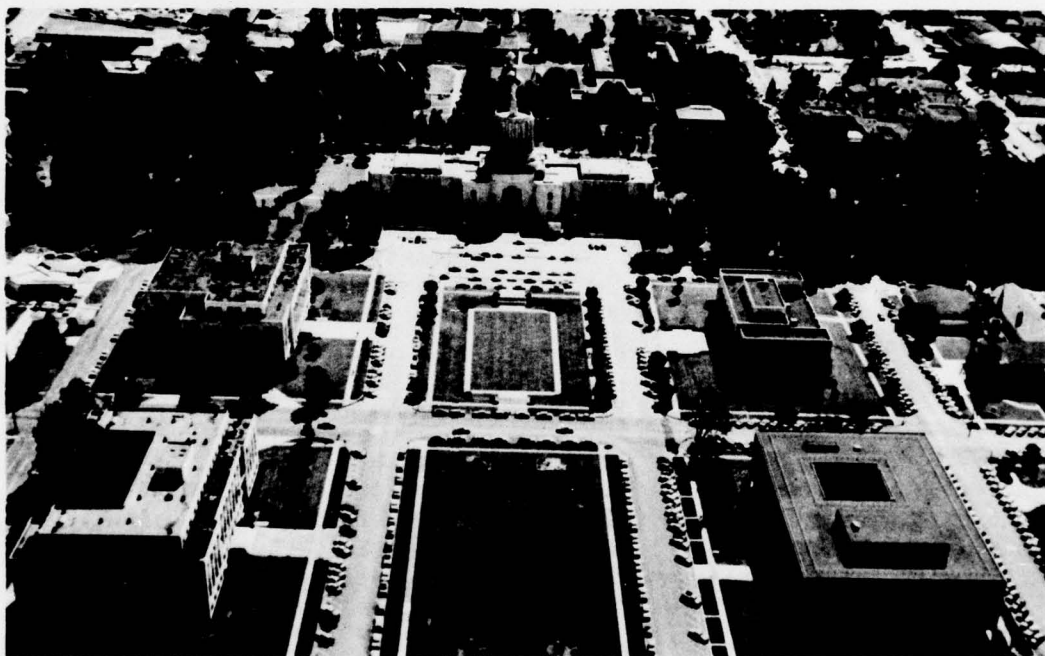


Photo C-1 There are at least eight State agencies directly involved with planning or managing Oregon's outdoor recreation resources. (O.S.H.D. Photo)

FEDERAL AGENCIES

Department of Agriculture

Recreation is an important use of the four national forests, involving almost 2-1/2 million acres of land and water in the Willamette Basin. The Forest Service manages these lands to serve present and future outdoor recreation needs and to coordinate recreation and other uses in a manner which will enhance recreation values. It also manages special areas of recreation value. These include wilderness, primary recreation zones, recreation study zones, and special interest zones.

The Soil Conservation Service provides financial and technical recreation help to sponsoring agencies such as counties, water control districts, and recreation districts through Public Law 566. It also provides assistance to private landowners in identifying recreation needs and programs.

Department of the Army

The Corps of Engineers, through its civil works program, makes an important contribution to the water-oriented recreation opportunities of the basin by the construction, operation, and maintenance of multi-purpose reservoirs. In 1968, 13 existing reservoirs totaled approximately 33,000 water-surface acres. Recreational facilities are constructed and managed by the Corps, or by local governments or other agencies in cooperation with the Corps. Unlike the existing projects in the basin, those authorized in the future probably will include recreation as a project purpose.

Department of the Interior

The National Park Service programs within the Willamette Basin include surveys concerning the preservation, protection, and development of the basin's natural, scientific, and historic recreation resources through archeological salvage; the National Landmark Program; and grants-in-aid assistance to the State under the Historic Properties Preservation Act, and through the Service's new long-range program, Parkscape, U. S. A.

The Fish and Wildlife Service administers numerous programs in close cooperation with its State counterparts in the interest of managing the basin's fish and wildlife resources.

The Bureau of Land Management recognizes outdoor recreation as a major component in its multiple use plans and management programs on over 400,000 acres under its jurisdiction. In addition, under the Recreation and Public Purposes Act, BLM may lease suitable tracts of land to state and local agencies for the installation of public recreation facilities.

The Bureau of Outdoor Recreation, through the Land and Water Conservation Fund Act and coordination responsibilities, assists State, local, and other Federal agencies in acquisition and development of recreation sites and in the development of statewide and regional outdoor recreation plans.

The Federal Water Pollution Control Administration is directly involved in outdoor recreation through its programs and in cooperation with State agencies to provide the level of water quality required to meet the needs of all uses as described in the Water Quality Standards for the State of Oregon.

The Bureau of Reclamation includes recreation as a project purpose in its reservoir oriented projects. Assistance in the development of long-range plans is provided by the Bureau of Outdoor Recreation while the National Park Service participates in final designs of facilities. After construction, recreation facilities are administered by a public non-Federal body or an appropriate Federal agency.

Federal Power Commission

Prior to approval of applications for new or renewal licenses for hydroelectric power projects, the applicant must have an approved plan for the development of the present and future public recreation potential of the project.

STATE AGENCIES

The State Highway Commission, through its Division of Parks, has the authority to acquire and develop lands for state-park and roadside-rest purposes. In the Willamette Basin, there are 35 State parks totaling about 12,000 acres.

The State Game Commission has authority for the conservation, propagation, and management of the game fish and wildlife resources of the State. The Commission has pursued a vigorous program to provide public access for hunting and fishing with emphasis on streamside access. It has been responsible for the development of numerous boat launching sites throughout the basin.

The Planning Section of the Governor's office is charged with preparing a comprehensive State plan including the outdoor recreation aspects.

The State Water Resources Board is responsible for formulating state water resources policy. The Board has restricted the use of waters of certain natural lakes having exceptional recreation and scenic values to domestic and related uses, and to recreation, fish and wildlife uses, and has designated minimum streamflows to support aquatic life and minimize pollution on many of the basin streams.

The State Marine Board was established to administer the State boating laws; to study, plan, and recommend the development of boating facilities for the safety and pleasure of the public; and to establish special boating regulations such as zoning of lakes and reservoirs.

The State Universities provide technical assistance to local agencies and undertake special studies and research on recreation problems.

The State Board of Health provides assistance and coordinates with Federal, State, and local agencies in addition to private interests that administer public recreation facilities. The State Sanitary Authority, a division of the Board of Health, has statutory responsibility to maintain reasonable standards of water in all rivers, streams, lakes, watersheds, and coastal areas of the State consistent with the protection of public health, recreational enjoyment of the people, and for the protection of human life and property, and conservation of plant, aquatic, and animal life.

The State Department of Forestry manages State-owned forest lands in the foothills of the Cascade Mountains and the Coast Range and provides for recreation uses to the extent feasible within their forest management obligations.

LOCAL GOVERNMENTS

Most of the larger cities and communities in the basin have active programs which supply much-needed facilities for local populations. Many of these organizations also provide parks and recreation areas that serve the visiting public as well. All Willamette Basin counties have progressive and active recreation programs to acquire and develop county and regional parks. Marion and Polk Counties, with the City of Salem, have organized to form a regional park and recreation agency. The counties of the Willamette Basin work in close cooperation with the State Division of Parks.

PRIVATE ENTITIES

Some large landowners, such as the timber companies, have taken steps to plan and develop some land for outdoor recreation.

Individuals and groups of small landowners have recognized the benefits of outdoor recreation and have begun planning to capitalize on these benefits.

The progress in private recreation planning and development has been slow, but will increase in the future as recreation demands grow.

ADDENDUM D - STATISTICAL FIGURES AND MAPS



Population density per square mile by subbasin; 1960

Resident and participating population by subbasin; 1980-2000-2020

Major land use by subbasin (in percent)

Recreation land by BOR class

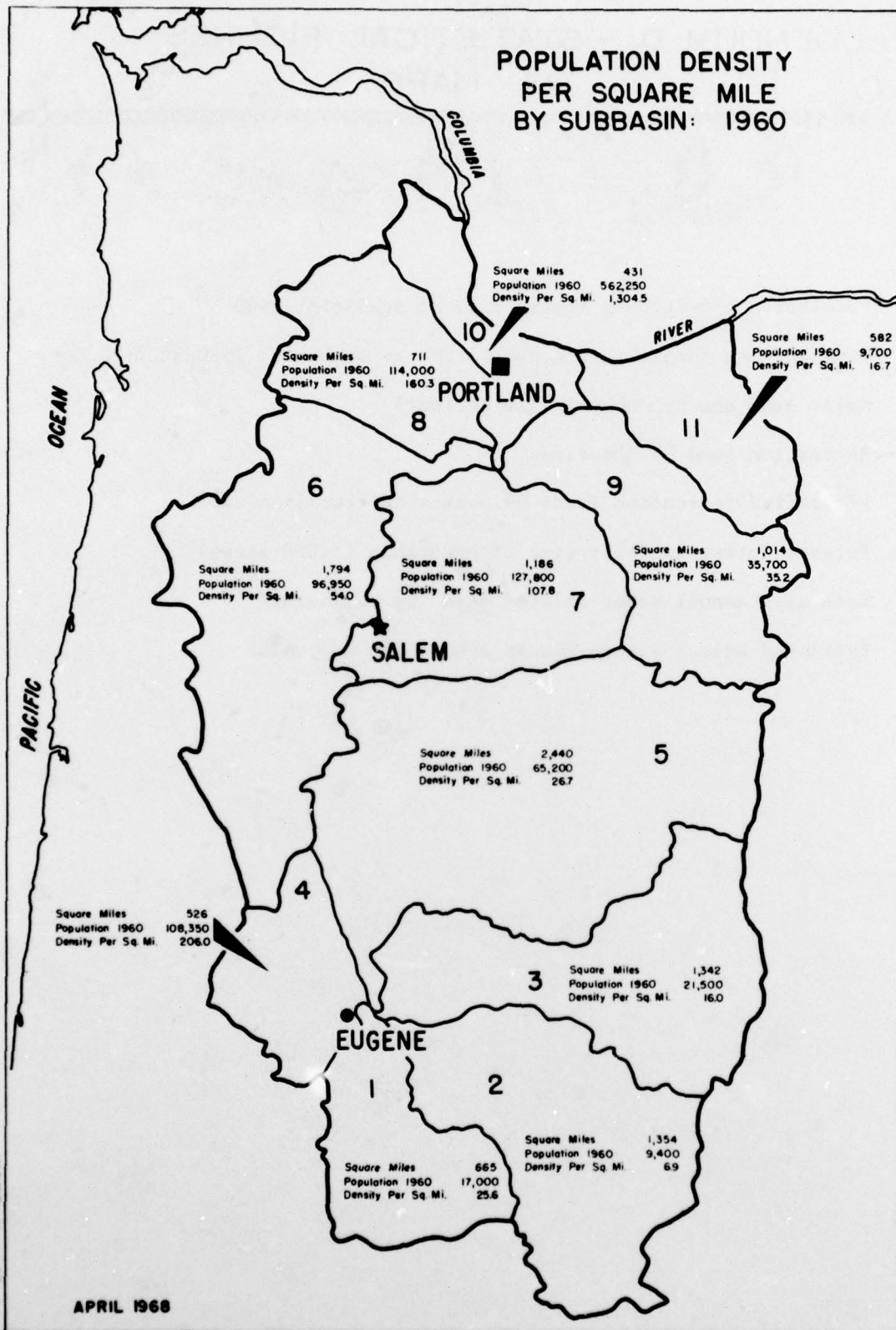
Identified recreation lands by ownership (total acres)

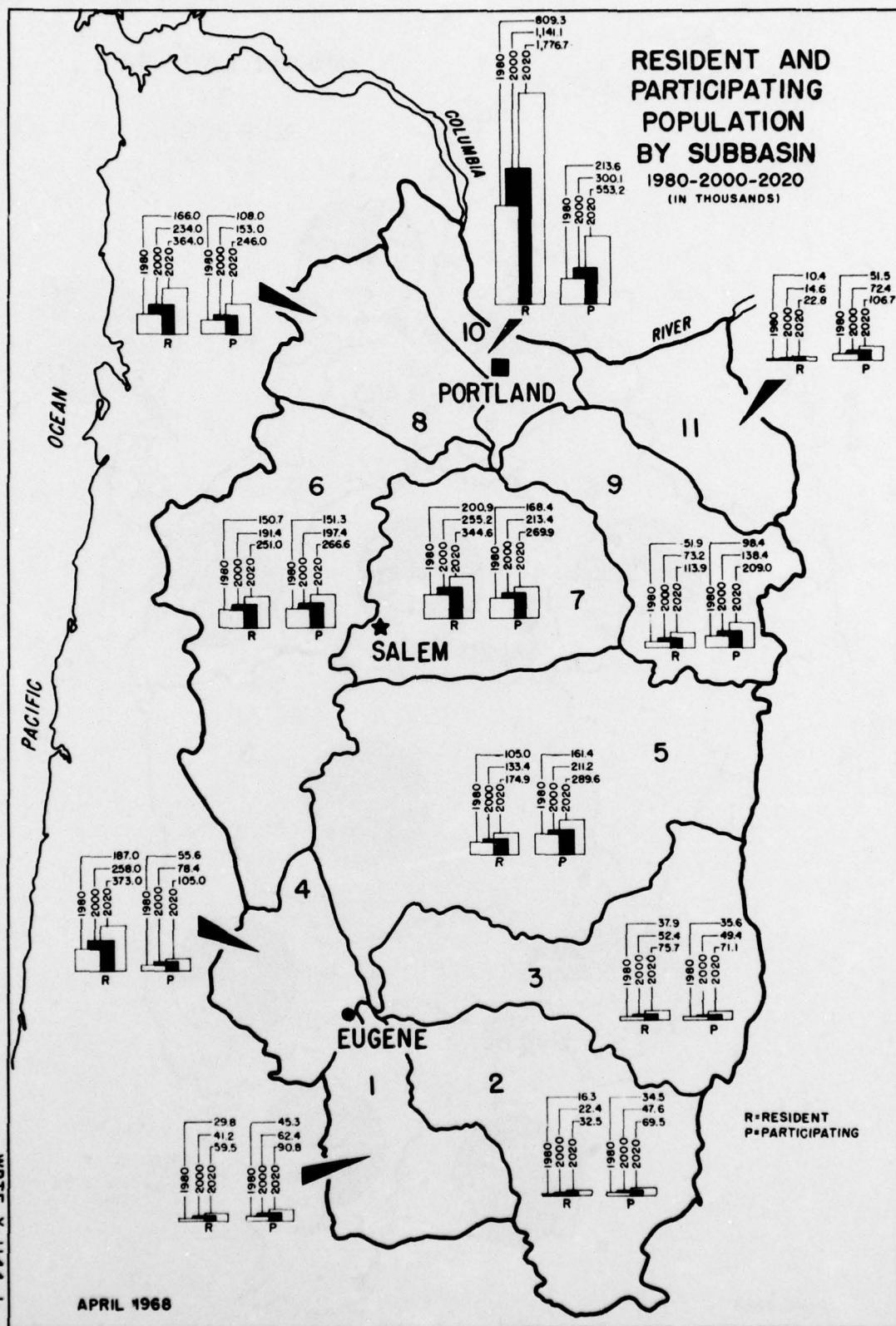
Private forest lands by size of ownership (1,000 acres)

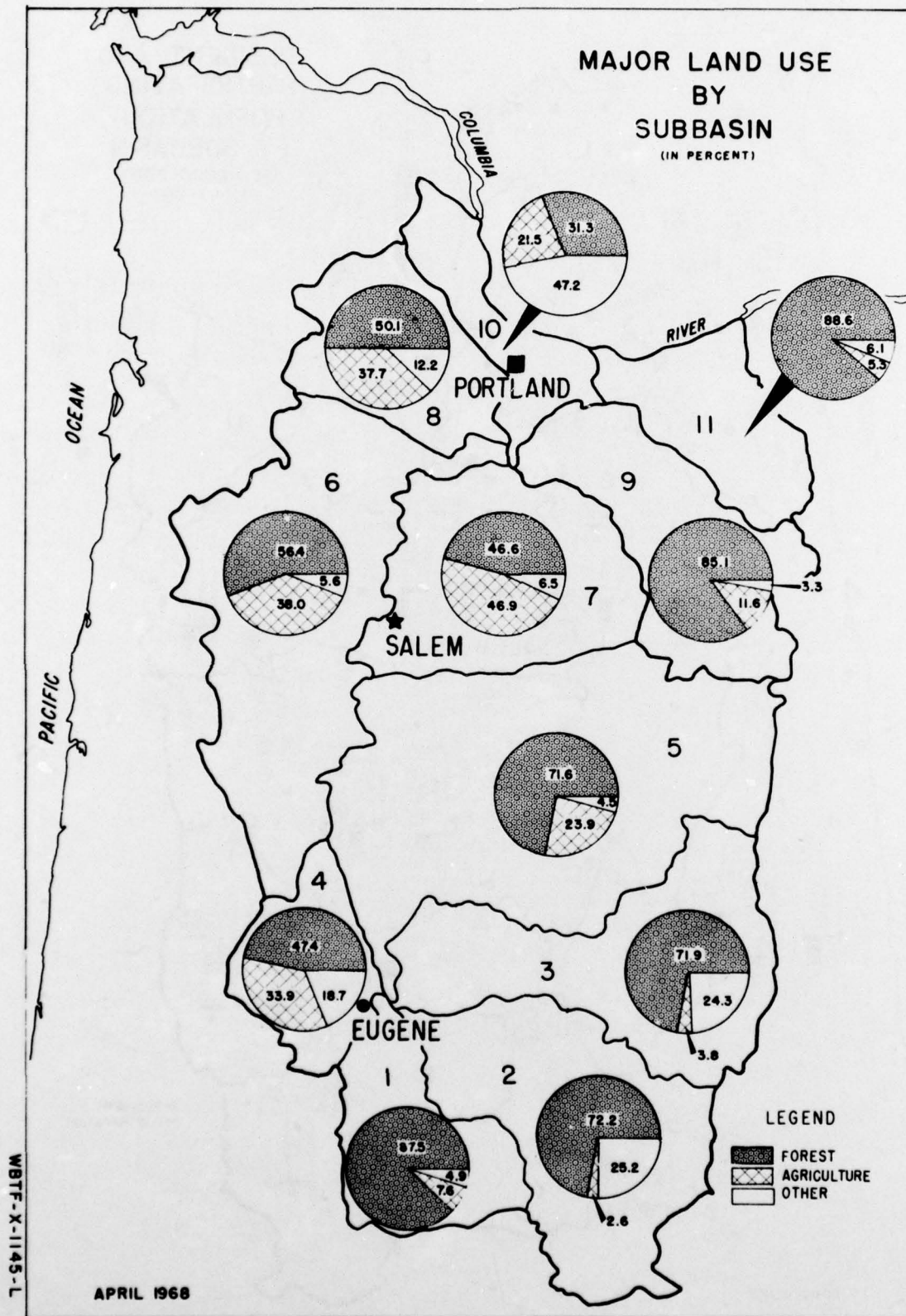
Estimated annual water-related need (by subbasin)

Estimated annual water-related demand (by subbasin)

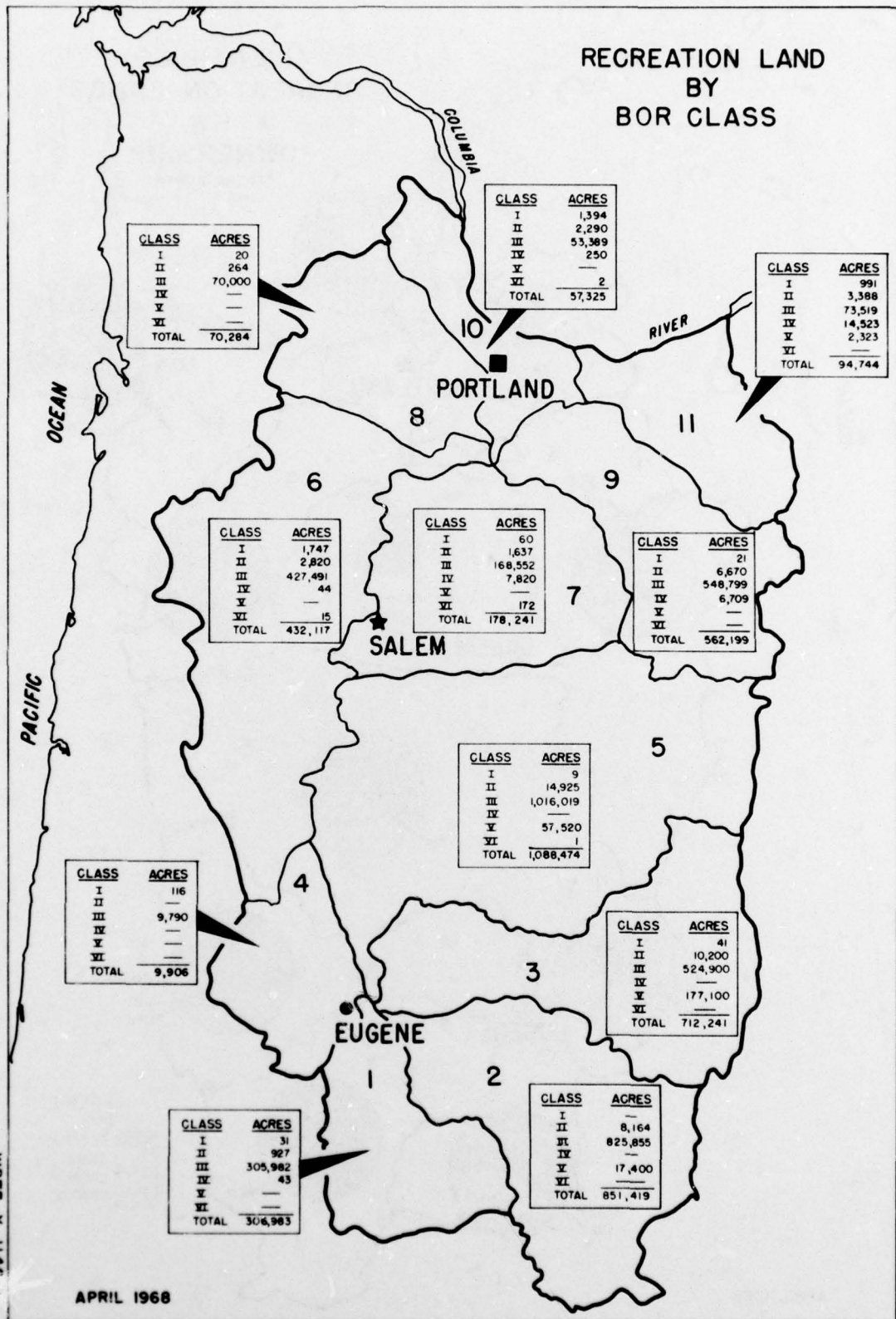
POPULATION DENSITY PER SQUARE MILE BY SUBBASIN: 1960





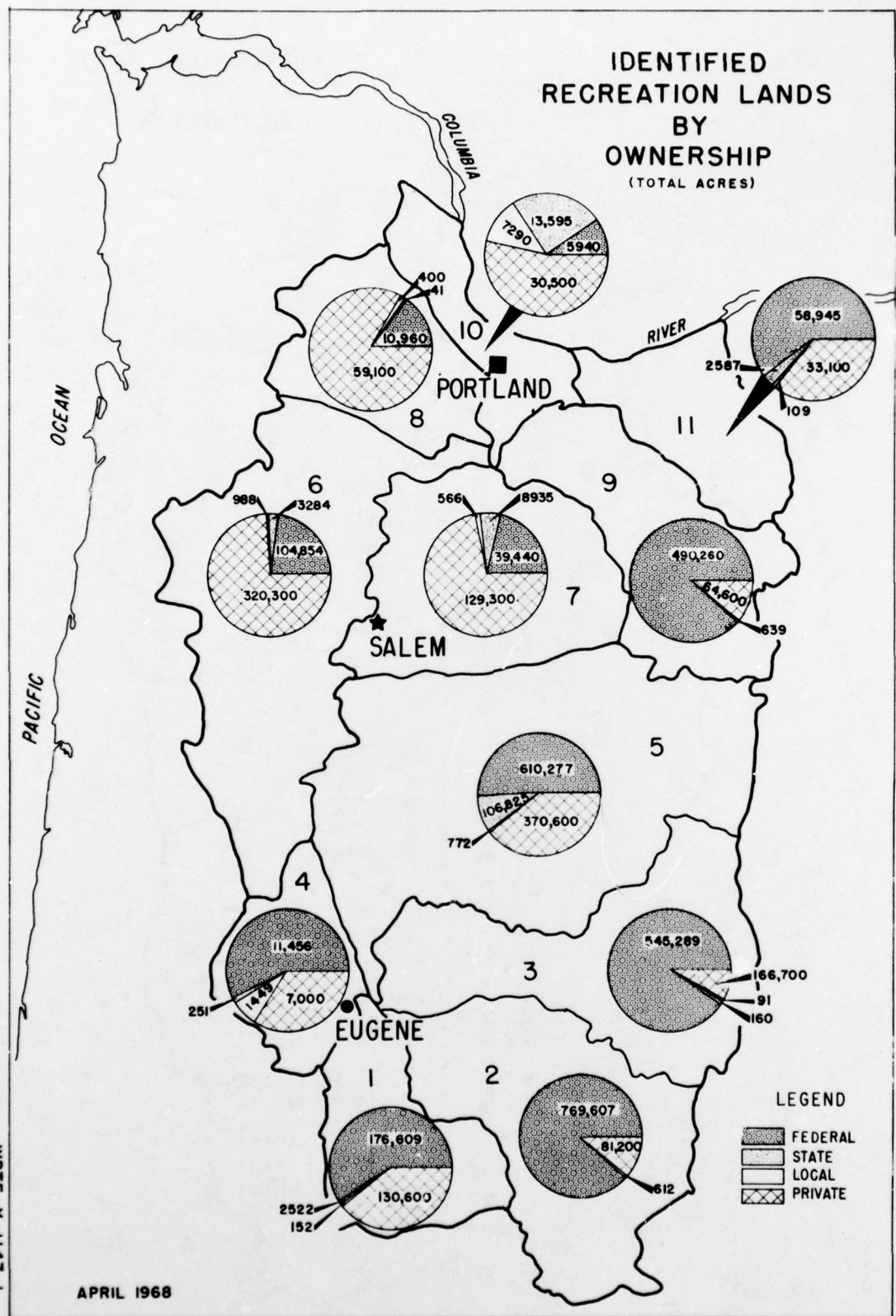


RECREATION LAND BY BOR CLASS



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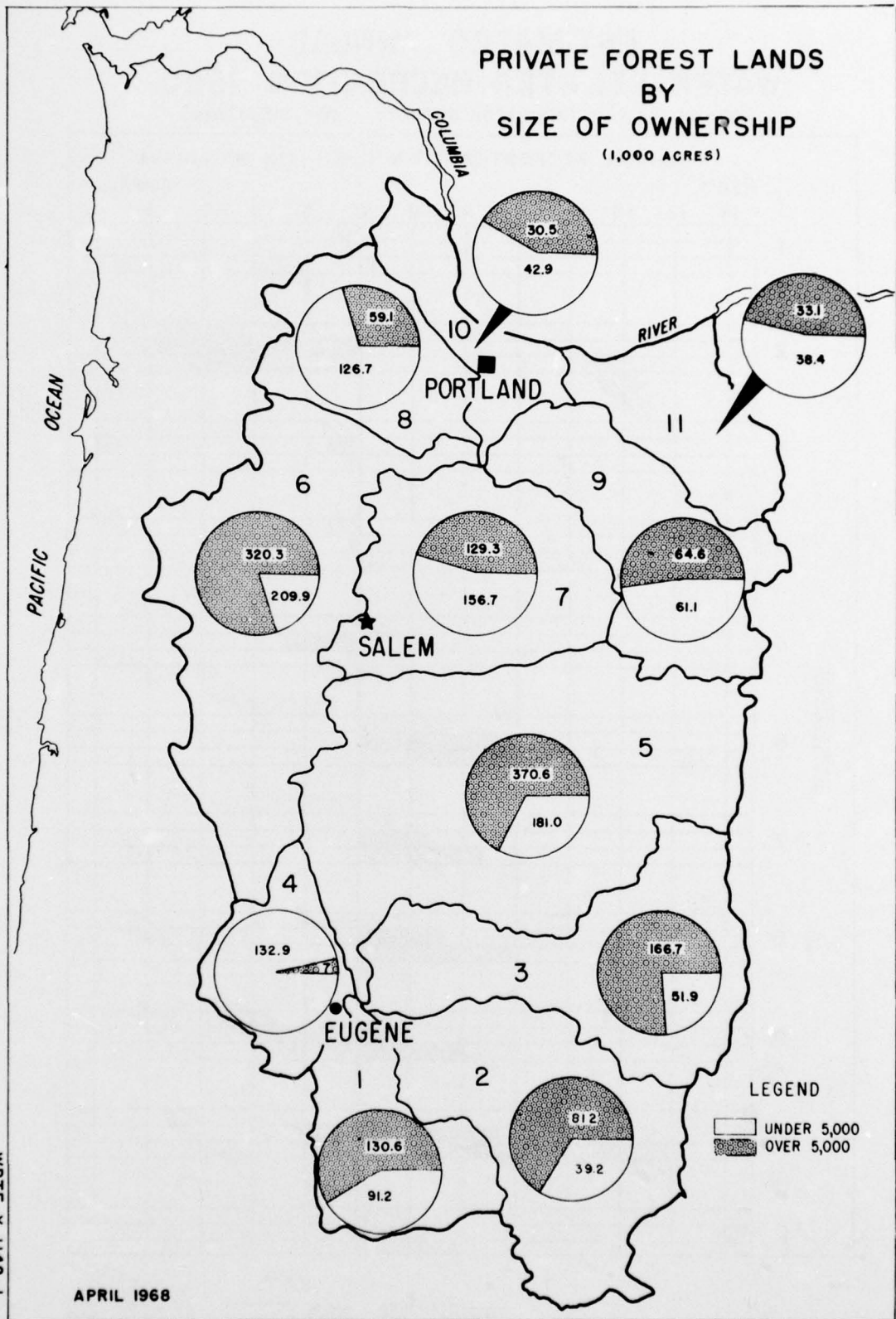
IDENTIFIED RECREATION LANDS BY OWNERSHIP (TOTAL ACRES)



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PRIVATE FOREST LANDS BY SIZE OF OWNERSHIP (1,000 ACRES)

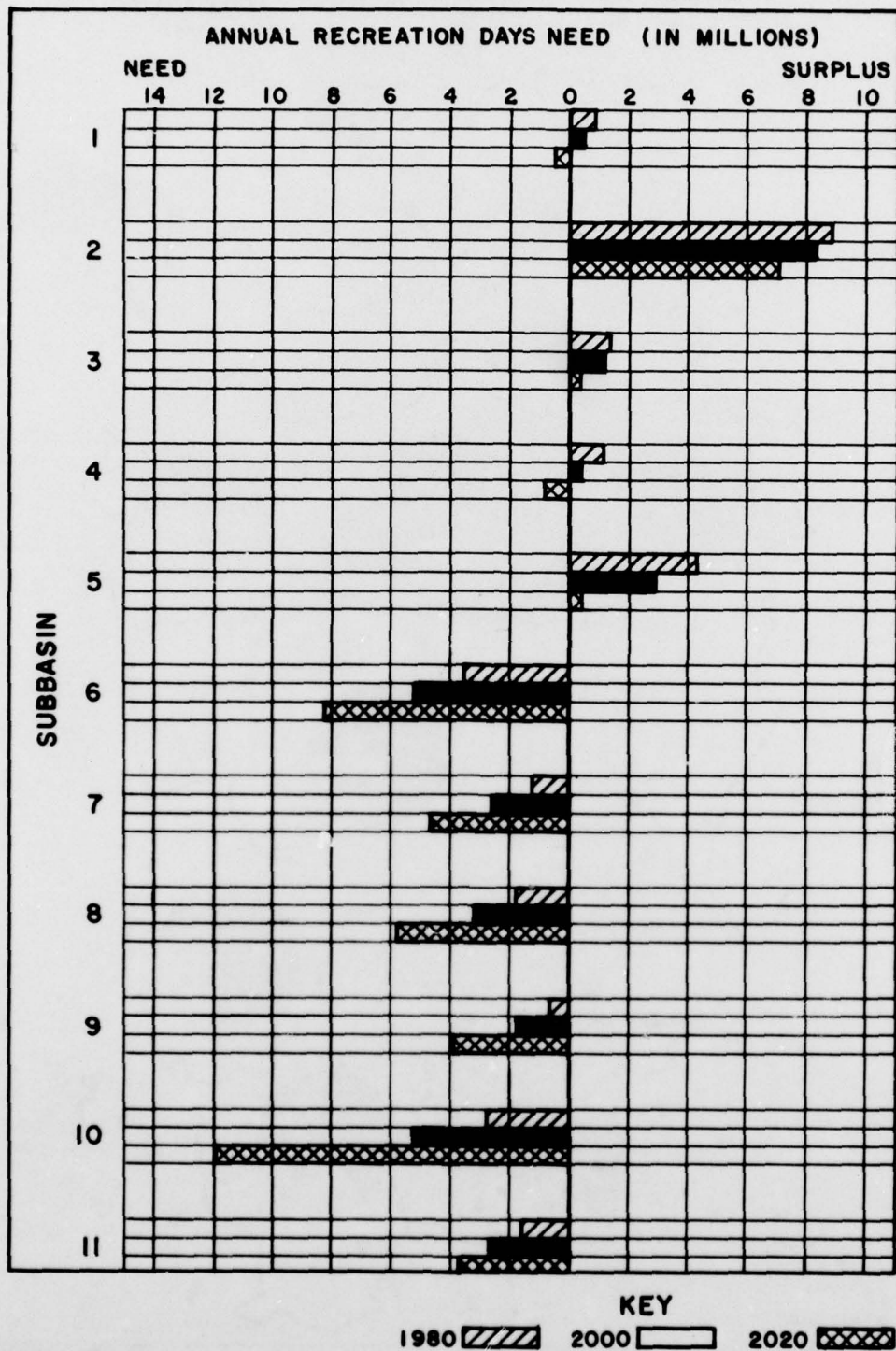


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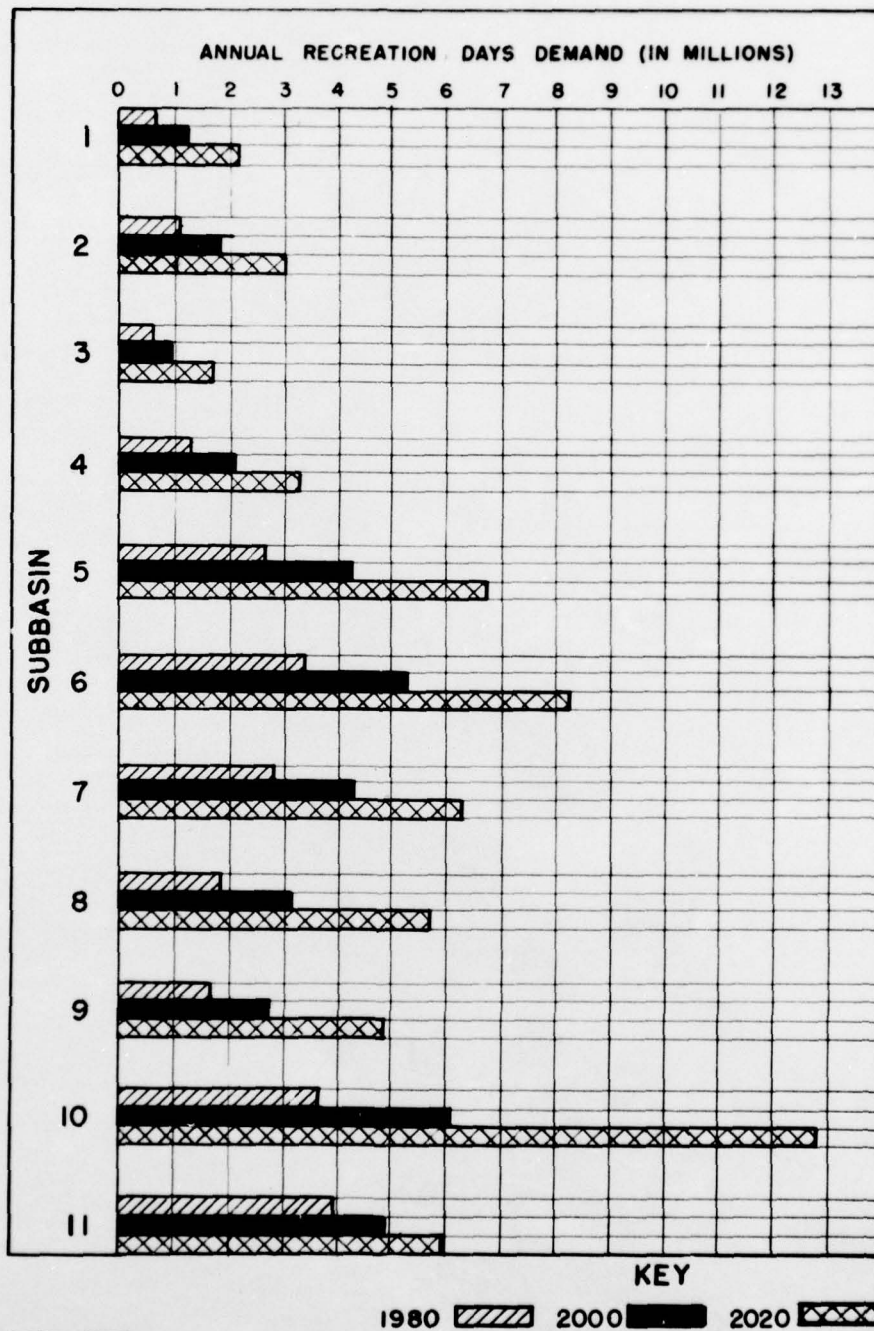
ESTIMATED ANNUAL WATER RELATED RECREATION NEED

(BASED ON RAW RESOURCE SUPPLY) (BY SUBBASIN)



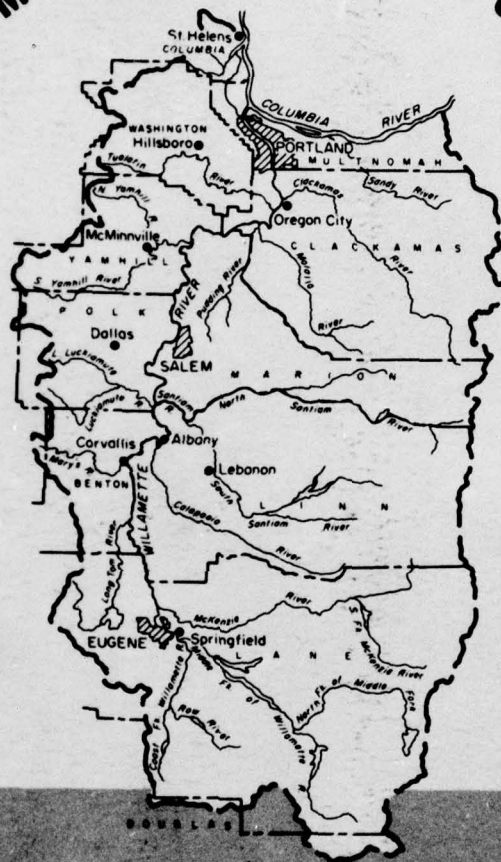
APRIL 1968

ESTIMATED ANNUAL WATER RELATED RECREATION DEMAND (BY SUBBASIN)



APRIL 1968

COMPREHENSIVE STUDY



Willamette Basin